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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
OAKLAND DIVISION**

In Re  
  
PG&E CORPORATION  
  
v.  
  
AECOM TECHNICAL SERVICES, INC.

Case No. 4:20-cv-05381-HSG (Lead Case)

(Reference withdrawn from Bankruptcy Case No. 19-30088, Adv. Proc. No. 20-03019 and Adv. Proc. No. 19-03008)

(Consolidated with Case No. 3:20-cv-08463-EMC)

**DECLARATION OF SAM KHAIRI IN  
SUPPORT OF PG&E'S MOTION TO  
DISMISS/STRIKE RE: AECOM'S  
SECOND AMENDED COUNTERCLAIM**

[Fed. R. Civ. P. 12(b)(6), 15(a)]

Date: November 18, 2021  
Time: 2:00 p.m.  
Courtroom: 2, 4th Floor  
Judge: Hon. Gilliam S. Haywood, Jr.

Complaint Filed: January 25, 2019  
Trial Date: February 14, 2022

1 I, Sam Khairi, declare:

2 1. I am a Manager in Pacific Gas & Electric Company's (PG&E) Gas Transmission  
3 Portfolio Management Division. I have worked at PG&E for approximately eight (8) years. Since  
4 mid-2017, I have overseen the Burney K2 Replacement Project (Project), which is the subject of  
5 this action. I make this declaration in support of PG&E's Rule 15(a) Motion to Strike and Rule  
6 12(b)(6) Motion to Dismiss as to AECOM Technical Services, Inc's (AECOM) Second Amended  
7 Counterclaim. Unless indicated otherwise, I have personal knowledge of the matters set forth  
8 below and if called as a witness, I could and would testify competently thereto.

9 2. Attached as **Exhibit A** is a true copy of relevant excerpts of Attachment 1 – Project  
10 Specific Information – to the EPC Agreement.

11 3. Attached as **Exhibit B** is a true copy of relevant excerpts of Attachment 2 – General  
12 Conditions – to the EPC Agreement.

13 4. Attached as **Exhibit C** is a true copy of relevant excerpts of Attachment 3 – Specific  
14 Conditions – to the EPC Agreement.

15 5. Attached as **Exhibit D** is a true copy of Contract Change Order No. 1 (excluding  
16 exhibits), executed September 16, 2016.

17 6. Attached as **Exhibit E** is a true copy of Contract Change Order No. 2 (excluding  
18 exhibits), executed January 9, 2017.

19 7. Attached as **Exhibit F** is a true copy of Contract Change Order No. 3 (excluding  
20 exhibits), executed February 20, 2017

21 8. Attached as **Exhibit G** is a true copy of Contract Change Order No. 4 (excluding  
22 exhibits), executed March 29, 2017.

23 9. Attached as **Exhibit H** is a true copy of Contract Change Order No.5 (excluding  
24 exhibits), executed June 6, 2017.

25 10. Attached as **Exhibit I** is a true copy of Contract Change Order No. 6 (excluding  
26 exhibits), executed December 7, 2017.

27 ///

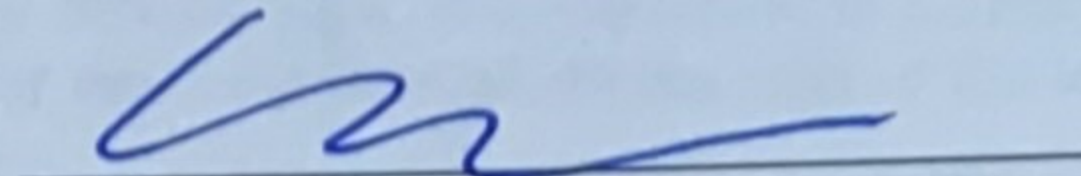
28 ///



11. Attached as **Exhibit J** is a true copy of relevant excerpts from Article 4 – Project Specific Information – to the Request for Proposal for the Project.<sup>1</sup>

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed August 9, 2021, in San Ramon, California.

  
SAM KHAIRI

<sup>1</sup> PG&E is only submitting excerpts of the Request for Proposal because it is voluminous, Consisting of numerous documents and attachments. However, if the Court would like a complete copy of the Request for Proposal, or any other exhibit attached to the Khairi Declaration, please let us know and we will be more than happy to provide a complete copy.



## **EXHIBIT A**



PACIFIC GAS AND ELECTRIC COMPANY  
GAS TRANSMISSION  
SAN RAMON, CALIFORNIA

PROJECT SPECIFIC INFORMATION, SPECIFICATION NUMBER 12107  
FOR ENGINEERING, PROCUREMENT AND CONSTRUCTION  
FOR BURNEY K2 COMPRESSOR UNIT REPLACEMENT  
AT BURNEY COMPRESSOR STATION,  
NATURAL GAS TRANSMISSION LINES 400/401, ORDER 30603707

Requirements Comprised of:

- General Conditions and Exhibits
- Specific Conditions to Specification 12107
- This Specification 12107 and Attachments

The following Attachments are provided in CD form, enclosed with this Request for Proposal:

- Attachment 1 Scope of Work
- Attachment 2 Burney Location Map
- Attachment 3 Burney Compressor Preliminary Design Basis
- Attachment 4 Proposed Burney Operating Diagram
- Attachment 5 Proposed Burney Main Gas P&ID
- Attachment 6 Various Proposed Station Plot Plan Drawings
- Attachment 7 Gas Turbine Centrifugal Compressor Package Specification
- Attachment 8 Burney Gas Compressor Package Proposal Attachment 9  
Single Line Drawings from Preliminary Engineering
- Attachment 10 PG&E Safety, OQ, and GSE Guidelines and Requirements
- Attachment 11 PG&E Gas Transmission Standards, Specifications, & Procedures
- Attachment 12 PG&E CAD Specifications and Guidelines
- Attachment 13 Burney Control Philosophy
- Attachment 14 Electronic Version of Preliminary Engineering Deliverables
- Attachment 15 Wind and Seismic Design Parameters
- Attachment 16 PG&E Project Delivery System Forms

BIDDER SIGN HERE TO INDICATE THIS SPECIFICATION HAS BEEN USED IN  
PREPARATION OF THE BID

Firm: \_\_\_\_\_ By: (print)\_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

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## 1 DEFINITIONS

The following definitions are in addition to those provided in the General Conditions and Specific Conditions.

1.1	"As-Built"	The manner, method and/or nature of actual physical plant construction.
1.2	ATC	Authority to Construct Permit required by the Air Pollution Control District
1.3	BOM	Bill of Materials
1.4	CBC	California Building Code
1.5	CPM	Critical Path Method
1.6	BCS	Burney Compressor Station
1.7	BK1	Burney K-1 Compression Unit
1.8	BK2	Burney K-2 Compression Unit
1.9	DOT	United States Department of Transportation
1.10	EPA	Environmental Protection Agency
1.11	EPC	Engineer, Procure, Construct
1.12	FAT	Factory Acceptance Testing
1.13	GPR	Ground Penetrating Radar
1.14	GPS	Global Positioning System
1.15	HMBP	Hazardous Materials Business Plan
1.16	HMI	Human Machine Interface
1.17	HVAC	Heating Ventilating and Air Conditioning
1.18	HW	Hazardous Waste
1.19	IFC	Issued for Construction

1.20	I/O	Input\Output
1.21	Jeeping	An electrical spark test to identify defects in pipe coating
1.22	MSDS	Material Safety Data Sheet(s)
1.23	NFPA	National Fire Protection Association
1.24	NTP	Notice to Proceed - Written authorization from PG&E to Contractor to initiate all or part of the Work, including any changes or additions as provided by Article 10 of the General Conditions
1.25	OSHA	Federal Occupational Safety & Health Administration
1.26	Cal-OSHA	California Occupational Safety & Health Administration
1.27	P&ID	Piping and Instrumentation Diagram
1.28	PDS	Project Delivery System
1.29	PLC	Programmable Logic Controller
1.30	PSI	Project Specific Information (Specification)
1.31	QA/QC	Quality Assurance/Quality Control
1.32	Roping	Pipeline curvature maintaining elastic deformation
1.33	SCADA	Supervisory Control and Data Acquisition
1.34	UBC	Uniform Building Code
1.35	Unifier	PG&E's Document Management System, provided by Oracle-Primavera

## 2 OBJECTIVE

PG&E owns and operates Line 400/401, a natural gas transmission pipeline system in Northern California. The Burney Compressor Station is part of the Line 400/401 pipeline system. PG&E studies indicate that replacement of Burney K-2 compressor and



modifications to Burney Compressor Station are needed to maintain reliability meet customer demands.

- 2.1 PG&E's objective for the Work is to replace natural gas compressor unit Burney K2 and to perform various upgrades to the Burney Compressor Station (BCS) to improve the reliability and operability. The Work also includes demolition of existing equipment and facilities. The modified BCS must be capable of flowing 2.2 billion standard cubic feet per day of natural gas. Compressor Unit K-1 at BCS was previously removed.
- 2.2 The existing equipment is becoming difficult to maintain and spare parts are becoming unavailable. Failure to replace the Burney K-2 compressor and associated equipment may result in a reduction in the flow capability of Line 400/401.
- 2.3 Work includes installation, and disposal lifecycle activities that reduce risk by improving safety, performance, and reliability of PG&E gas asset families that include, but are not limited to gas transmission pipelines, compression, measurement, and control.

### **3 SITE INFORMATION**

The site information is provided to Contractor for consideration in Contractor's design, scheduling, resource requirements determination, construction, Work coordination, and estimating purposes.

- 3.1 The Burney Compressor Station is located in Shasta County of Northern California. BCS is approximately 1.5 miles northeast of Burney, California.
- 3.2 Refer to the Preliminary Design Basis, Attachment 3, used in the Preliminary Engineering phase for the replacement of K-2 for site- specific conditions. Requirements outlined in Attachment 3 shall apply to all aspects of this Work.

### **4 SCOPE OF WORK**

- 4.1 The Work shall include, but not be limited to the Scope of Work (Attachment 1). Contractor shall engineer, procure, construct and commission the replacement compressor or compressors, auxiliary equipment and support facilities to achieve fully operable systems. Except as specifically provided herein, Contractor shall furnish all project management, construction management, engineering, procurement, construction, installation, commissioning, demolition, labor, tools,

parts, equipment, supplies, facilities, and transportation necessary to accomplish PG&E's objective stated above, whether or not each item or component necessary to do so is described herein.

#### 4.2 Engineering Work Completed To-Date:

4.2.1 30% Design Deliverables: the 30% Design Deliverables package was developed in 2014 by others. These deliverables are included with this RFP in Attachment 14. The electronic files in their native format will be provided to the successful contractor for further development.

4.2.1.1 The 30% Design Deliverables were based on two (2) Solar Taurus 70 compressor units in separate buildings located in an undisturbed area of the existing compressor station site.

4.2.1.2 It is the intent of this RFP that a minimum of changes be made to the existing 30% Design Deliverables. However, subsequent to completion of the 30% package, it was determined the existing station discharge gas cooler needs to be expanded.

4.2.2 Air Permit to Construct: PG&E has obtained the draft Authority to Construct (ATC) and is currently finalizing the permit with the local air district.

4.2.2.1 The air permit application was based on two (2) Solar Taurus 70 compressor units in separate buildings located in an undisturbed area of the existing compressor station site.

4.2.3 Gas Turbine Compressor Unit RFP: PG&E has issued an RFP for turbine-compressor units to 3 manufacturers and has selected the units through a formal review process.

4.3 The existing K-2 compressor will be removed and replaced with a new compressor unit tagged BK2. It is PG&E's plan to continue to use the existing suction separation equipment (subject to further evaluation per this contract) and the existing connection points for Lines L-400 and L-401.

4.4 Additional major equipment to be installed includes; station and unit recycle valves, station controls, unit controls, upgrades to the station electrical systems, associated switchgear, MCC, UPS, Station Battery, Automatic Transfer System, station compressed air system, new auxiliary building, air compressor replacement, standby generator replacement, and a new compressor building. Contractor shall be responsible for coordination, interface, purchase, delivery,



installation, start-up, commissioning, and warranty of all new equipment and systems to accomplish PG&E's objective stated in Section 2 of this Specification unless specifically defined otherwise.

- 4.5 The Burney Compressor Station shall be designed for unmanned operation. It shall be capable of remote control through the gas SCADA system by PG&E's Gas Control Center in San Ramon, CA.
- 4.6 Contractor shall perform studies and investigations to support design, construction, and operation. These studies include, but are not limited to: a geotechnical investigation for design of foundations and identifying underground structures; a 3-Dimensional model of the station facilities; a piping flexibility analysis to evaluate the stress levels in station piping; a noise study to evaluate the BCS will operate within allowable noise levels; a study to limit BCS pressure drop to 10 psi; an evaluation of the adequacy of the gas cooling systems; a station load flow, short circuit, arc flash, co-ordination/protection analysis' and generator/transformer/circuit breaker /cable/conduit/battery/UPS sizing studies.
- 4.7 Contractor shall evaluate and if necessary upgrade any other system not listed to ensure that the project objectives and requirements from this Specification are accomplished. Contractor shall design and construct the new facilities to reduce the methane emissions generated from BCS. Contractor shall propose methods to accomplish this to PG&E for approval.
- 4.8 As provided in Section 26 of this Specification, PG&E may elect to have certain Work described herein performed by various departments within PG&E
- 4.9 Contractor shall apply the following criteria when selecting equipment and components. This criteria is hierarchical, attempt to apply the first criteria, if it does not apply, use the next or second criteria, if does not apply continue through the list. Equipment and components shall be equivalent or approved equal to the equipment identified and defined by these selection criteria. Any changes, upgrades or deviations from these criteria must be approved by PG&E. All equipment, devices and components shall comply with applicable PG&E standards (see Attachments 10 and 11). Note that PG&E does not maintain approved equipment specifications for many of the major equipment items as identified in Attachment 1 and that Contractor will be required to develop these.
  - 4.9.1 Scope of Work (see Attachment 1)
  - 4.9.2 Turbine/compressor package (see Attachments 7 and 8)
  - 4.9.3 The Engineering Design Criteria (see Attachment 3)

#### 4.9.4 Burney Control Philosophy (see Attachment 13).

## 5 WORK PHASES

- 5.1 The Work hereunder has been divided into two phases as follows. Contractor shall not commence any Work nor incur any charge under each phase of the Work unless authorized, in writing, by PG&E. A separate PG&E Notice to Proceed shall be required to authorize Contractor to proceed with each phase of the Work. PG&E reserves the right to provide Contractor with a Notice to Proceed for either phase, or any portion of either phase, of the Work at any time following Contract award and prior to expiration of this Contract.
- 5.2 In the event PG&E's Notice to Proceed (NTP) for either phase of the Work is provided to Contractor at such a time as to require Contractor to amend the commence or complete date for any item on Contractor's project schedule provided for in Section 4 of the Specific Conditions to this Specification, Contractor shall immediately so advise the PG&E Project Manager and provide PG&E an amended project schedule. Such amended schedule shall describe all consequence and impact of PG&E's Notice to Proceed.
- 5.3 Phase I. The phase I Work includes detailed production engineering, equipment specification, completion of design, procurement long lead material, and the development of all construction documents for the replacement of BK2 and modifications to BCS. All work for this phase will be in accordance with PG&E's Project Delivery System (PDS) (see Attachment 16).
- 5.3.1 Engineering and constructability reviews will be conducted for the completion of 30, 60 and 90 percent design completion and for the Issued for Construction (IFC) design.
- 5.3.2 Design development and preparation of construction documents will be completed to 100 percent level after incorporating the design review comments at the IFC review. The 100 percent IFC documents will be complete and suitable for construction.
- 5.3.3 Any long or moderate lead time material that must be purchased in advance of Phase II and must be identified and purchased during Phase I.
- 5.3.4 All IFC documents shall be complete and suitable for Contractor's construction Work and shall convey all construction requirements.



drawings. Multiple copies of as-built mark-ups are not allowed.

- 19.6 Contractor shall provide as-built redline mark-ups immediately after unit Commissioning. Contractor shall provide as-built redline mark-ups for elementary drawings and operating diagrams two weeks prior to Commissioning, excepting only punch list items.
- 19.7 Contractor shall request Engineering Documents from the PG&E GTE&D GSM Records Center ([GSMRecords@pge.com](mailto:GSMRecords@pge.com)) located at 6121 Bollinger Canyon Rd, San Ramon, CA 94583. Request instructions shall be followed in accordance to the PG&E GTE&D Drafting Standards, "RECORDS" section.
- 19.7.1 Specific response times to Engineering Document requests are outlined in the PG&E GTE&D Drafting Standards, "RECORDS" section.

## 20 PRODUCTION ENGINEERING

- 20.1 No later than thirty (30) calendar days following receipt of PG&E's notice of award of Contract, Contractor shall provide to PG&E an estimate of the total design hours required to perform the Work hereunder, by classification; for example, Drafting, Electrical Engineer, Civil Engineer. Contractor shall complete the Fee Schedule in the Pricing Workbook to support this estimate.
- 20.1.1 No later than forty-five (45) calendar days following the conclusion of all Work, Contractor shall provide to PG&E a detailed itemization of the actual design hours performed to accomplish the Work, by classification.
- 20.2 Contractor shall provide the following engineering services. Contractor's design and engineering shall incorporate and be compatible with all of the existing and to-be-installed facilities to accomplish the scope of Work and adhere to PG&E's Project Delivery System.
- 20.2.1 Preliminary Engineering: Contractor shall evaluate all deliverables previously generated as part of the Burney K2 Replacement Preliminary Engineering contained in Attachment 14 to determine its adequacy and compatibility with the requirements of this Specification.
- 20.2.2 Existing BCS documentation is in varying states of accuracy. PG&E makes no claim that any documentation is accurate. Contractor shall take this into account when performing the scope of Work.
- 20.2.3 Production\Detailed Engineering: Contractor shall generate specifications,

new and modified existing drawings, calculations, subcontract, purchase order documents, procedures and any other work required for the procurement, construction, and commissioning of the new turbine/compressor unit, unit auxiliary and station equipment.

20.2.3.1 Contractor shall develop project management and control documents including, but not limited to, project scope definition, CPM schedule plan, cost plan, project execution plan, and project procedures such as safety, QA/QC, document control, communications, WMDVBE subcontracting, and organization charts.

20.2.3.2 Contractor shall provide engineering, design, and the development of construction documents.

20.2.3.3 PG&E reserves the right to reject the package deliverables produced for the 30/60/90% or IFC stage if the content and/or quality of the package are, in PG&E's sole opinion, significantly substandard. Contractor shall not proceed to the next design stage or to construction until PG&E approval is obtained. Contractor shall not receive additional compensation to correct the deliverables nor will Contractor be granted schedule relief in the event substandard Work causes this issue.

20.2.4 Contractor shall plan for at least one monthly site PG&E visit during the engineering phase of the project to gather data and/or evaluate constructability issues on site with PG&E. These site visits can be either at the San Ramon office or at Burney Compressor Station. The design shall incorporate constructability and future maintenance considerations.

20.2.5 Contractor shall include construction representation at the 30/60/90% review meetings to provide input for constructability.

20.2.6 Contractor shall host a project kick-off meeting and three engineering review meetings at a PG&E facility. The three engineering review meetings shall be based upon the percentage complete of 30 percent, 60 percent and 90 percent of the engineering Work. PG&E, at its option, shall review Contractor's specifications, calculations, and drawings in progress during each of these meetings

20.2.7 Kick-Off Meeting and Site Visit: Contractor shall schedule a project kick-off meeting no later than two (2) weeks after receipt of PG&E's Notice to Proceed. Contractor shall tour Burney Compressor Station with PG&E as

part of the kick-off meeting. Minimum attendees for Contractor shall include Contractor's Project Manager, Contractor's Project Engineer, Contractor's Construction Manager, and lead discipline engineers. As a minimum, discussion topics and materials will include:

- 20.2.7.1 Presentation of the project team by Contractor and PG&E
- 20.2.7.2 Scope of Work as outlined in this Specification
- 20.2.7.3 Contractor and PG&E responsibilities as outlined in this Specification
- 20.2.7.4 Project objectives
- 20.2.7.5 Project goals
- 20.2.7.6 Communication strategies, including requirements set forth in this Specification
- 20.2.7.7 Roles and responsibilities for all team members
- 20.2.7.8 Client expectations

20.2.8 Thirty (30) Percent Complete Design Review Meeting: Note that preliminary versions of some of the documents listed below were completed in 2014. Contractor shall update these as necessary. Contractor shall provide all documents to PG&E in accordance with the PG&E Project Delivery System (PDS) for review no later than ten (10) working days before the date of the design review meeting. If so requested by Contractor, PG&E will return markups to Contractor within ten (10) working days after the date of the design review meeting. Information to be provided to PG&E by Contractor at the 30 percent complete design review meeting includes, but is not limited to, the following:

- 20.2.8.1 Noise Study
- 20.2.8.2 Geotechnical Investigation Report
- 20.2.8.3 Station Pressure Drop Study
- 20.2.8.4 Discharge Gas Cooler Study
- 20.2.8.5 Inlet Gas/Liquids Separation Study
- 20.2.8.6 Electrical Load Study
- 20.2.8.7 Document Management and Control Plan
- 20.2.8.8 Outline of subcontracting specifications
- 20.2.8.9 Master Drawing List, including affected pre-existing drawings
- 20.2.8.10 Milestone schedule which includes Phase I and Phase II activities
- 20.2.8.11 Draft cost plan which tracks expected costs directly related to the milestone schedule
- 20.2.8.12 Risk Register
- 20.2.8.13 Updated Design Basis Document

- 20.2.8.14 Preliminary Estimate of Phase II costs
- 20.2.8.15 3D CAD Model of the unit and station facilities
- 20.2.8.16 Site Plan and Layout
- 20.2.8.17 Draft Demolition Plan
- 20.2.8.18 Preliminary Pothole Plan / Sketch
- 20.2.8.19 Preliminary Equipment Layout
- 20.2.8.20 Preliminary Building Plans, Elevations, Sections and Details
- 20.2.8.21 Preliminary Foundation Plan, Sections and Details
- 20.2.8.22 Preliminary calculations for buildings
- 20.2.8.23 Draft Piping and Instrumentation Diagrams (P&IDs)
- 20.2.8.24 Draft Piping Plans
- 20.2.8.25 Draft Electrical Schematic
- 20.2.8.26 Draft Electrical One Line Drawings
- 20.2.8.27 Preliminary Control System Architecture Drawing
- 20.2.8.28 Draft control philosophy which includes overview, description of operations, I/O list of alarms, PLC I/O listing, and shutdowns
- 20.2.8.29 Draft Hazardous Area Classification
- 20.2.8.30 Calculations for Sizing Major Equipment and Gas Piping
- 20.2.8.31 Blow Down Volume and Time Calculations (Total Suction, Discharge and Unit Volumes)
- 20.2.8.32 Preliminary Material quantity takeoffs
- 20.2.8.33 Listing of long-lead material/equipment items\*
- 20.2.8.34 Equipment List including Instrument List/Index\*
- 20.2.8.35 Commodity Materials List – Major Piping and Valves\*
- 20.2.8.36 All other items necessary to convey general construction requirements.

\* Items to be listed in Bill of Materials (BOM)

20.2.9 Sixty (60) Percent Complete Design Review Meeting: A design review meeting shall be conducted by Contractor prior to final development of drawing details and shall illustrate the system layout and operation of the new units and existing station modifications. Contractor shall provide all documents to PG&E in accordance with the PDS for review no later than ten (10) working days before the date of the design review meeting. If so requested by Contractor, PG&E will return markups to Contractor within ten (10) working days after the date of the design review. Information to be provided to PG&E by Contractor at the 60 percent complete design review meeting includes, but is not limited to, updates to information, calculations and drawings provided during the 30 percent complete design review and the following:



- 20.2.9.1 Updated Site Plan
- 20.2.9.2 Site Grading, Road and Drainage
- 20.2.9.3 Soil Erosion and Sediment Control
- 20.2.9.4 Foundation Plan(s)
- 20.2.9.5 Site and Drainage Calculations
- 20.2.9.6 Steel Support and Foundation Calculations
- 20.2.9.7 Piping Plan and Section and Detail Drawings
- 20.2.9.8 Thermal/Mechanical Stress Analysis
- 20.2.9.9 Conduit Fill
- 20.2.9.10 Conduit Layouts
- 20.2.9.11 Electrical Details
- 20.2.9.12 Panel Layout Outlines
- 20.2.9.13 Lighting Drawings
- 20.2.9.14 Electrical Schematics
- 20.2.9.15 Connection Diagrams
- 20.2.9.16 Grounding Plot Plan
- 20.2.9.17 Station Control functions and hardware summary, see  
Section 14 of this Specification and Attachments 13 and 14.
- 20.2.9.18 Material Listing of Takeoffs and Bulk Items
- 20.2.9.19 Equipment and Instrument Listing by Number and  
Description
- 20.2.9.20 Outage and Clearance Plan
- 20.2.9.21 Cause and Effect Chart

20.2.10 Ninety (90) Percent Complete Design Review Meeting: This final drawing review meeting shall include the total drawing package necessary for construction. Design development and preparation of construction documents shall be 100 percent complete after incorporating the design review comments. Contractor shall provide all documents to PG&E for review no later than ten (10) working days before the date of the design review meeting. All drawings shall be detail checked and cross-discipline checked before submittal to PG&E. All construction documents shall be complete and suitable for construction bidding. If so requested by Contractor, PG&E will return markups to Contractor within ten (10) working days after the date of the design review meeting. Information to be provided to PG&E by Contractor at the 90 percent complete design review meeting includes, but is not limited to, updates to information, calculations and drawings provided during the 30 and 60 percent design review and the following:

- 20.2.10.1 All drawings
- 20.2.10.2 Piping Material Sheets

- 20.2.10.3 Conduit Wire and Cable Schedule
- 20.2.10.4 Hydrostatic Testing Scheme and Materials
- 20.2.10.5 Completed Material Listing of Takeoffs and Bulk Items
- 20.2.10.6 Purchase Order documentation for turbine/compressor and other long lead materials
- 20.2.10.7 Equipment and Instrumentation Listing Complete with Manufacturer and Model Number
- 20.2.10.8 Line Schedule
- 20.2.10.9 Calibration Information
- 20.2.10.10 Bulk Materials Lists
- 20.2.10.11 Final construction plans
- 20.2.10.12 Final subcontracting specifications
- 20.2.10.13 Material specifications
- 20.2.10.14 Stress Analyses
- 20.2.10.15 Preliminary PLM Add/Edit Form
- 20.2.10.16 Short circuit analysis, protective device coordination and arc flash analysis
- 20.2.10.17 Other design calculations
- 20.2.10.18 Copy of the unit PLC program printout
- 20.2.10.19 Operating/maintenance documents including, but not limited to, safety and hazardous waste training documentation and welder certification
- 20.2.10.20 All other documents necessary to itemize the requirements to accomplish PG&E's objective stated in Section 2 of this Specification and the Scope of Work (Attachment 1).
- 20.2.10.21 Draft of detailed project schedule. No later than thirty (30) calendar days prior to planned construction commence date, Contractor shall submit the final detailed project schedule.
- 20.2.10.22 Final cost plan and Phase II cost estimate

20.2.11 Contractor shall incorporate comments within five (5) working days of Contractor's receipt of PG&E's comments. Contractor shall then forward the completed drawings and data to PG&E for final review. PG&E will review the information and provide any comments to Contractor within ten (10) working days for incorporation into the final detailed engineering and design drawings and documents. Contractor shall incorporate these final comments and return the completed drawings and data to PG&E no later than five (5) working days following receipt of PG&E's final comments.

- 21.6.5 Placement of machinery and ancillary equipment
- 21.6.6 Alignment checks
- 21.6.7 Cleanliness check of lube oil
- 21.6.8 Ensure any required tools and startup spares are on site
- 21.6.9 Ensure necessary operation, maintenance, and repair manuals and start-up information are on site
- 21.7 From the beginning of purchasing activities, Contractor shall track procurement activities and shall provide weekly summary status reports of activity to PG&E. In addition, Contractor shall compile vendor data including relevant vendor manuals, data sheets, operation and maintenance manuals, and inspection records for incorporation in the project manual and documentation.
- 21.8 Contractor shall be responsible for quality control with the supplier, on-site inspection of material received, and for ensuring that all material procured satisfies the requirements of PG&E Standards and the U.S. Department of Transportation 49 CFR Part 192.
- 21.9 To assure safety, reliability, and affordability of procured material, Contractor shall comply with PG&E's material quality requirements stated in General Conditions Article 3.4.
- 21.10 For all Contractor-procured material, prior to commencing Work, Contractor shall provide all material certifications and testing documentation to the PG&E Project Manager.
- 21.11 Contractor shall identify equipment inspection and hold points within the milestone schedule.

## **22 CONSTRUCTION REQUIREMENTS**

### **22.1 General requirements:**

- 22.1.1 PG&E's top priority is safety. This includes taking all necessary precautions and actions to ensure the safety of the public, and all PG&E, Contractor and Subcontractor employees working at the Job Site. See Sections 23, 24 and 25 of this Specification for safety, environmental, and Hazmat requirement prior to construction.
- 22.1.2 Conduct Asset Management Awareness and Training: Before construction work begins, all Contractor and subcontractor personnel performing work on PG&E gas asset families shall view the Gas Safety Excellence video

message located on YouTube at:

<https://www.youtube.com/watch?v=Fp9lf28800o>.

- 22.1.3 Notice to Proceed (NTP). Contractor shall not commence construction nor mobilize equipment and personnel to the site until authorized to do so in a written Notice to Proceed by PG&E. The Notice to Proceed will contain final permits and any special requirements for the construction. Contractor shall provide written notice to PG&E within 24 hours of issuance of the Notice to Proceed of any conflicts impacting construction. If Contractor fails to provide the required notice, the Contractor shall not be entitled to a change order for compliance with more stringent, additional or conflicting terms and conditions.
- 22.1.4 Contractor shall perform the Work in accordance with Gas Standards and Specifications Manual TD-4950M (Update #66). Selected standards and specifications are attached hereto for Contractor's reference (Attachments 10 and 11). Contractor shall submit an RFI to PG&E Construction Manager if the Contractor deems it necessary to be provided with additional copies or latest versions of standards and specifications as required for completion of the objective for the Work
- 22.1.5 Contractor shall provide the services of a survey company licensed in the State of California to perform construction surveys as required to perform the Work. The costs for this Work shall be included in Contractor's price proposal. Contractor shall submit survey maps and As-Built drawings with the Project Documentation.
- 22.1.6 Contractor shall not bring any individual onto the Work site, other than Contractor's employees, unless authorized, in writing, by PG&E.
- 22.1.7 Contractor shall place an emphasis on housekeeping during construction. PG&E reserves the right to require that Contractor hire a cleaning service to maintain the Work site in a clean and orderly condition.
- 22.1.8 Contractor shall employ methods to maximize recycling and to minimize waste and carbon footprint during construction.
- 22.1.9 For "hot work" Contractor shall submit a permit for hot Work to PG&E Construction Manager for approval (see Attachment 10, "PG&E Hot Work Permit (09/2005)")
- 22.1.10 Contractor will ensure that Contractor and subcontractor personnel use tools and equipment that are designed for Work and manufactured to a



quality that equals or exceeds industry standards.

- 22.1.11 Contractor shall calibrate and maintain tools and equipment in accordance with manufacturer requirements.
  - 22.1.11.1 Submit to PG&E CM the calibration and maintenance records for each tool and piece of equipment on electronic forms or written documents that conform to MSA requirements.
  - 22.1.11.2 PG&E will provide a list of approved tools if requested by Contractor. In the event that the make or model of tool(s) is not pre-approved by PG&E, submit manufacturer data sheets to PG&E CM for approval.
  - 22.1.11.3 PG&E approval of tools and equipment shall be obtained in advance of Work
- 22.1.12 English shall be designated as the official language of PG&E for the purpose of stating the requirements of the Contract Documents and relaying verbal directives at Work site. Contractor shall accommodate its employees and subcontractor personnel who use a language other than the English language, including but not limited to:
  - 22.1.12.1 Providing information orally to individuals in the course of conducting tailboards, safety meetings, and communicating with the public;
  - 22.1.12.2 Ensuring compliance with the site-specific safety plan and Work plans; and
  - 22.1.12.3 Complying with local, state, and federal laws regarding personnel who use a language other than the English language.
- 22.1.13 Contractor shall retain and make available at least one (1) copy of each record at the project site to enable inspection, review, and audits by PG&E at any time.
  - 22.1.13.1 Submit information after award of contract in accordance with General Conditions (Article 8.3).
  - 22.1.13.2 Maintain proof of insurance coverage in accordance with General Conditions (Article 20).
  - 22.1.13.3 Maintain As-Built drawings in accordance with Section 22.14.
  - 22.1.13.4 Retain copies of permits and regulatory requirements at the required site location(s) for the duration of Work.
  - 22.1.13.5 Maintain a public contact log for the duration of the project.
  - 22.1.13.6 Public contact log shall provide the date, time, and identification of the caller, the nature of the problem, and the

action taken and date resolved.

22.1.13.7 Provide copies of the public contact log to PG&E CM at the weekly construction meetings and with other project documentation.

22.1.13.8 Maintain equipment maintenance records.

22.1.13.9 Maintain calibration records for tools and testing equipment.

22.1.14 Contractor shall be responsible for coordinating with PG&E to determine all site-specific conditions including, but not limited to, construction personnel parking, sanitary and rest facilities, laydown and storage areas and coordination with other activities at the site.

## 22.2 Construction Worker Qualifications and Training.

22.2.1 Contractor shall train personnel and provide documentation for Operator Qualifications (OQ) in accordance with the document attached hereto (see Attachment 10, "TD-4008S Operator Qualification Program Requirements" and "TD-4008S, Attachment 1: Covered Task List").

22.2.2 For work covered by the Department of Transportation Operation Qualification Guidelines listed in 49 CFR 192 and 195 Contractor and Subcontractor(s) must be qualified to perform such Work in accordance with General Conditions, Article 12.12.

22.2.3 Prior to commencing any Work on site, Contractor shall present Hazard Communication training to Contractor's and subcontractor's personnel in accordance with Section 24.1.1 this Specification . Such training shall be in compliance with all applicable laws, rules and regulations including, but not limited to, OSHA, and adequate to prepare such personnel for the issues related to the possible hazards of constructing and commissioning a new compressor station as well as the specific hazards associated with the Work

22.2.4 Contractor shall ensure that each welder is tested and qualified for the type of pipe and procedure provided to Contractor with the applicable CWA according to the PG&E Gas Standard and in accordance with API Standard 1104 prior to performing the welding work.

22.2.4.1 Contractor shall submit the names of qualified welders to the PG&E Construction Manager for verification and documentation for the pipe specified for this project within the required elapsed time for validity of the qualification.

22.2.4.2 PG&E will perform testing of welders not previously qualified.

Contractor shall contact PG&E Construction Manager no later than fourteen (14) days prior to the date on which welding qualification testing is to be scheduled.

- 22.2.4.3 As part of the qualification testing, each welder shall be required to make a weld using pipe material of the same specifications as the pipeline specified, and using the same electrodes specified for the pipeline per approved welding procedure. Each welder shall make the qualification test weld using the same welding technique, welding current, and travel speed that he or she will use if permitted to work on the subject pipeline.
- 22.2.4.4 Contractor shall retain, at the job site at all times, copies of PG&E welder certification together with documents sufficient to identify each welder as the individual certified. Failure to produce such certification and documentation may result in PG&E requesting that the welder be removed from the Work and any welds performed by such individual replaced by Contractor at no additional cost to PG&E.
- 22.2.4.5 Labor or standby cost for welders during tests and while waiting for test results shall be at no additional cost to PG&E.

## 22.3 Field Office and Maintenance:

- 22.3.1 PG&E will provide the on-site construction yard for use by Contractor. For purpose of this proposal, Contractor shall assume that the construction yard shall be as shown in Attachment 6.
- 22.3.2 In addition to other requirements stated in this Specification and General Conditions to this Contract, during the term of this Contract, Contractor shall provide tools, barriers, space heaters, potable and non-potable water, self-contained toilets, shelter, and cleaning facilities as required by applicable Federal, State and local rules, laws and regulations for performance of the Work and the safety of Contractor's and subcontractor's personnel and equipment storage. PG&E's restrooms and break areas will not be available for Contractor's use and Contractor shall be responsible for providing adequate restroom/break facilities/areas for its employees or subcontractors.
- 22.3.3 Temporary Electric Power - Contractor shall provide necessary electrical power for tools and equipment. PG&E can make 115VAC service at 60 amps available for Contractor's office trailer. PG&E will make no charge for electrical power used by Contractor. PG&E shall not be responsible for

damage to Contractor's equipment or computers due to unplanned outages, power surges or dips.

22.3.4 PG&E will provide two (2) telephone lines at Contractors field office trailer.

22.3.5 Contractor shall provide, construct, and maintain a field office for three PG&E Construction Management personnel. Contractor shall also provide sufficient space with tables and chairs to hold PG&E weekly project meetings with Contractor and subcontractors as necessary. Office and supporting facilities shall be considered to be a portion of the requirements for maintaining a project construction yard. The PG&E Construction Manager will designate the office location. The office shall have electricity, heating, ventilation, air conditioning, drinking water, sanitation, waste disposal, and amenities.

22.4 Material Receipt and Storage:

22.4.1 Contractor shall receive and inventory all Work materials, equipment and tools shipped to the project site, verify their suitability versus the applicable drawings, and inspect for damage. Contractor shall promptly return any damaged or incorrect parts and new or correct material shall be ordered at no additional cost to PG&E. Contractor shall be responsible for security and safeguarding of all Work materials, equipment and tools stored on-site.

22.4.2 All material must be shipped with material certifications and/or testing documents. Contractor shall retain such documentation at the jobsite and available to the PG&E Project Manager during the performance of Work.

22.4.3 Contractor shall provide labor necessary at the Burney station to receive, unload and properly store all materials of construction. PG&E will provide inside warehousing only for the most sensitive materials of construction such as electronics and instrumentation. PG&E will designate outside areas at the plant site for storage of construction materials. Contractor shall ensure that it and its subcontractors are in full compliance with all applicable laws, regulations, and ordinances governing the storage of hazardous materials including, but not limited to, the Uniform Fire Code.

22.5 Subsurface Structures and Conditions:



22.5.1 Contractor shall confirm the locations of subsurface structures as required to complete the Work described herein. Potholing shall be performed as the primary methods for confirming location(s) of subsurface structures. Excavation and potholing Work shall be performed in accordance with the attached documents (Attachment 10, "Potholing Scope of Work Specification" and "Potholing Data Sheet").

22.5.1.1 There may be unknown buried structures in the area that are not shown on the Contract Drawings. Contractor shall exercise caution when performing Work.

22.5.1.2 Contractor shall assume all risk when excavating near existing PG&E natural gas pipelines and underground electrical facilities, buried structures, and utilities as shown on the PG&E as-built drawings. Contractor shall repair any damages to substructures caused by the Work at no additional cost to PG&E

22.5.1.3 Submit a work plan for utility and buried structure investigations; coordinate the Work with the subsurface investigations which will use GPR, potholing, and other means as appropriate. Contractor shall address coordination of Work with the subsurface investigations in the site-specific safety plan.

22.5.1.4 Submit pothole data in Unifier as described by the document attached hereto (see Attachment 10, "Potholing Data Sheet").

22.5.1.5 PG&E anticipates that the existing grade or top of ground shown on the PG&E as-built drawings may vary up to one (1) vertical foot compared to actual grade in the field. As such, costs associated with a one foot variation in grade shall be included as a part of Contractor's cost proposal.

22.5.1.6 Contractor shall notify the PG&E CM immediately in the event that unforeseen structures or changed conditions are discovered and submit a request for information (RFI) on Unifier. Describe the condition encountered, recommended solution, associated cost change, and impact to the schedule.

22.5.2 Contractor shall perform subsurface investigations for the purpose of characterizing groundwater conditions and shall perform this work prior to planning pipeline fabrication and installation. Potholing shall be performed as one method for confirming groundwater conditions.

22.5.2.1 Regardless of the groundwater assessments described herein, PG&E anticipates that open excavations may require minor (incidental) dewatering operations to maintain a firm working

surface and preserve the integrity of excavated surfaces. As such, costs associated with small, attended pumping (dewatering) systems shall be included as a part of Contractor's cost proposal. For the purpose of the bid proposal, minor dewatering operations shall include, but shall not be limited to, a minimum of two (2) non-clog centrifugal pumps in addition to appurtenant hoses, valves, fuel, generators, and associated equipment. Each pump shall be capable of lifting 10 to 100 gallons per minute at 20 feet to 50 feet of total dynamic head (TDH). Contractor shall comply with the SWPPP when discharging pumped groundwater.

22.5.2.2 Contractor shall notify the PG&E Construction Manager immediately in the event that groundwater is encountered in open excavations at depths or flow rates that exceed anticipated groundwater conditions.

22.5.2.3 In all situations, Contractor will ensure that bell-holes and trench bottoms are free of water. Provide firm footing for workers in the bell-holes and trenches.

22.5.3 Contractor shall perform subsurface investigations for the purpose of characterizing subsurface soil conditions and shall perform this Work prior to planning pipeline fabrication and installation along each reach of the pipeline alignment as described herein. Potholing shall be performed as one method for confirming subsurface soil conditions.

22.5.3.1 Contractor shall notify PG&E Construction Manager immediately in the event that subsurface conditions are encountered in open excavations that differ from the anticipated subsurface conditions.

## 22.6 Construction Permits and Working Hours:

22.6.1 Except for the permits to be obtained from the Shasta County Air Quality Management District by PG&E, Contractor shall be responsible for all permitting required for the scope of Work. Contractor shall determine requirements and file all permit applications. Contractor shall be responsible for the engineering of all site plans, buildings, and soil erosion and sediment control drawings necessary to comply with Federal, State and local agency requirements and comments, including revisions. Contractor shall provide engineering coordination with permit agencies and provide appropriate revisions to the permit drawings and specifications.

22.6.2 The design of the facilities, in addition to providing safe and reliable service in complying with or exceeding all applicable regulations, must provide a design which adheres to all permit conditions. Contractor shall retain copies of permits and regulatory requirements at the Contractor's engineering office and at the site construction trailer for the duration of the Work.

22.6.3 For the purpose of the cost proposal, Contractor shall assume the construction Work may be performed at the following times of day: 6:00 a.m. to 6:00 p.m., Monday through Saturday.

22.6.4 Final work hours may be provided as conditions of the final approved permit(s). Provide notifications to as required by the final approved permits. For the purpose of the price proposal, Contractor shall assume that working hours are limited to ten (10) hours per day and six (6) days per week Monday through Saturday. Exceptions to the 6/10 work hour limitation can only be granted by Director of Gas Transmission Construction Management.

22.7 Shoring, Excavation, Backfill, and Compaction:

22.7.1 Shoring: Contractor shall secure the services of a professional engineer registered in the State of California to design shoring and bracing for open excavations as required to support the Work in accordance with federal, state and local laws, rules, and regulations. The costs for this Work shall be included in Contractor's price proposal.

22.7.2 Contractor shall furnish and install shoring as required by CAL/OSHA regulations and any additional shoring and bracing as needed to support any excavation in a safe and stable condition. All shoring shall be removed by Contractor after use.

22.7.3 Excavation: Excavation in the Station shall be by "hand-dig or vacuum truck unless other means are authorized by the PG&E Construction manager.

22.7.4 Contractor shall perform all Work necessary for the control and disposal of all surface and subterranean water to the extent and for such time as is necessary to keep water from interfering with the progress, efficiency, and quality of Work. If inclement weather or the presence of groundwater causes any excavation to fail or fill with water, it is Contractor's responsibility to do whatever is necessary to promptly restore the

excavation to an acceptable condition and the facilities to their appropriate configuration without any additional cost to PG&E.

- 22.7.5 Unless otherwise specified on plans and/or permits, Contractor shall ensure that the depth of excavation provides for a minimum of forty-eight (48) inches of radial cover on the pipes, measured from finished grade.
- 22.7.6 Contractor shall ensure that the width of trenches is at least twelve (12) inches greater than the outside diameter of the pipe being installed so that 1) all the facilities may be installed without damage, and 2) sufficient space is provided for the placement and compaction of backfill material.
- 22.7.7 Contractor shall ensure that the bottoms of excavations are level, flat, without surface irregularities, and cleared of rocks or other debris. Trench elevation changes shall be by gradual transition and not by abrupt drops. At vertical angles, Contractor shall ensure that the trench bottom is formed, relieved and padded to fit the curvature of the pipeline.
- 22.7.8 Contractor shall place a minimum of six (6) inches of sand padding in the bottom of all excavations for placement of facilities. Contractor shall ensure that padding and padding material are in accordance with Paragraph 22.7.9.1.
- 22.7.9 Backfill: Contractor shall secure the approval of PG&E before any backfilling is done. No backfilling shall be done until the pipelines and appurtenances have been inspected and As-Built drawings reviewed and accepted by PG&E. If any backfilling is done without said approval, PG&E shall have the right to require removal of the backfill for examination. The cost of such removal shall be borne by Contractor. Approval by PG&E does not relieve Contractor of the responsibility to perform and warrant the Work in accordance with this Contract.
- 22.7.9.1 Padding: Trenches shall be filled with padding material to at least twelve (12) inches above the top of the pipeline. The pipe shall be supported by a complete filling of the area under the pipe. This may be achieved by filling to the spring line and flooding the fill material. Contractor shall ensure that all padding material is in accordance with PG&E EMS 4123 (see Attachment 10, "EMS 4123, backfill Sand").
- 22.7.9.2 Contractor shall ensure that the remainder of the excavation is filled immediately after the padding material has been placed on top of the pipeline. Contractor shall exercise necessary



precautions to prevent any large or sharp rocks from getting in the backfill material.

22.7.9.3 The remainder of the excavation may be filled with native material. Selected backfill or imported backfill, when required for filling excavations, shall be considered a normal part of Work at no additional cost to PG&E.

22.7.9.4 Contractor shall protect electrolysis test station assembly and wires during backfilling. If electrolysis test station leads are backfilled, they must be dug out at Contractor's expense.

22.7.10 Compaction: Compaction of all padding and trench fill by Contractor will be required throughout the project. Compaction shall be performed in accordance with construction drawings and all governmental rules, regulations, ordinances, and codes; and jurisdictional agency permits.

22.7.10.1 Contractor shall retain the services of a compaction company for the performance of the compaction tests. Contractor shall coordinate with the compaction-testing contractor including, but not limited to, leaving some holes open during the backfill and compaction process to enable testing of specific lifts and Contractor returning to complete compaction and backfilling. Contractor shall perform compaction tests at each open excavation including, but not limited to, bell hole, sniff hole, valve pit, and open excavation. The number of compaction tests at a given location shall be defined as one (1) test at existing ground surface in addition to one (1) test for each vertical linear foot of excavated depth.

22.7.10.2 A compaction log shall be kept on a set of drawings in Contractor's office for review and shall be updated daily and be available to PG&E and/or the controlling agency, upon request.

22.7.10.3 Upon completion of all compaction tests, Contractor shall provide the written, certified compaction test reports to the PG&E on-site representative. The location and depth must be recorded on the report at the time of the test.

22.7.10.4 Backfill shall be thoroughly compacted to no less than 90 percent of relative maximum compaction. The level of compaction shall be determined by California Test Methods 216 or 231, or the most current editions ASTM D1557 and ASTM D6938-10.

22.7.10.5 At locations where native soil is allowed for backfilling, Contractor shall compact excavations to required density by jetting or other approved means. In jetting, excavations shall be

backfilled in lifts no greater than eighteen (18) inches, jetted with water until material is soaked, and compact by tamping.

22.8 Gas Piping Fabrication:

- 22.8.1 Contractor shall cut, align, and join pipe and appurtenances. Work shall conform to PG&E's standards for the specified pipe and the most current edition of API 1104 "Welding of Pipelines and Related Facilities."
- 22.8.2 Contractor shall ensure that all angles, either horizontal or vertical, and roping, conform to radii shown on Construction Drawings and are made in accordance with PG&E Gas Standard A-36.
- 22.8.3 In no event will Contractor use miter welds for any angle in the construction of pipeline.
- 22.8.4 In the event Contractor recommends the use of field bends for any angles in the construction of the pipeline, Contractor shall submit the location and angle of such to the PG&E on-site representative. Contractor shall not proceed with such field bends until authorized by PG&E. In the event Contractor receives such authorization from PG&E, Contractor shall proceed in accordance with PG&E Gas Standard A-36.
- 22.8.5 All welding elbows shall be made from forty-five (45) or ninety- (90) degree segments. When angles are formed by segments of welding elbows, the angles shall be torch cut with a beveling machine, and ground. Segments shall be a minimum of two (2) inches from top-of-bevel to top-of-bevel at the throat of the segment. Segmenting of fittings shall be in accordance with PG&E Gas Standard B-25.
- 22.8.6 PG&E will verify all angles for tie-in pieces.
- 22.8.7 Contractor shall re-cut and bevel all pipe ends as may be necessary to maintain correct alignment of the pipeline. Contractor shall make all pipe bevels with a beveling machine; hand beveling will not be permitted. All field bevels shall be cut and finished at right angles to the longitudinal axis of the pipe evenly and without rough surfaces. A power-driven grinder and/or wire buffer shall be used to finish the cut to a bevel and face identical to the original.

22.9 Welding Gas Piping, Valves and Fittings:

- 22.9.1 Contractor shall maintain, on the welding rig being used to perform any gas piping, valve or fitting welding, a copy of the applicable welding

procedure with the applicable Project Specific Conditions, wind meter, temp stick, water-proof marker, and an amp gauge.

- 22.9.2 Contractor's welders must be certified in accordance with Paragraph 8.2 of this Specification prior to performing any Work under this Contract. Contractor shall ensure that all field joints in the pipeline are welded, including fittings and accessories, according to the applicable PG&E Gas Standard, and that all welding equals or exceeds the requirements of API Standard 1104, most current edition, "A Standard for Field Welding of Pipelines."
- 22.9.3 Contractor shall ensure that all welds are marked with a waterproof crayon by the welders, with the numbers assigned to them by PG&E. Should any welder leave the job, his/her number will not be duplicated. No punch or steel stenciling will be permitted.
- 22.9.4 Contractor shall ensure that the pipe is properly aligned with ends square with the pipe axis prior to welding. No misalignment of the pipe will be allowed. In no event will Contractor use back-welding to compensate for poor alignment of the main line pipe.
- 22.9.5 Contractor shall ensure that no welding electrodes or ground connections are permitted to arc on the pipeline except in the joint groove to be welded. Any such arc burn shall be considered a defect and shall be removed.
- 22.9.6 Contractor shall ensure that welding is not done when the weather conditions are unfit or would impair the quality of the completed weld, as determined by PG&E. When necessary, Contractor shall provide and use a cover of a type that will give adequate protection to the welder, and the weld, from the weather. Contractor shall furnish and install anchored windshields to protect welding when the winds exceed fifteen (15) miles per hour or as required by the PG&E Construction Manager.
- 22.9.7 Contractor shall provide a fully charged fire extinguisher for immediate availability at each location where welding or cutting is to be done. C
- 22.9.8 Contractor shall comply with United States Department of Forestry rules for fire control.
- 22.9.9 Contractor shall utilize shields or screens, to be approved by PG&E, to protect pedestrians, residents and others from exposure to ultraviolet light resulting from arc welding.

- 22.9.10 Contractor shall not throw waste electrodes and/or electrode stubs into the trench, pipe, or backfill material.
- 22.9.11 PG&E will visually inspect and/or radiographically test all welds according to PG&E Gas Standard TD-4160P-60, Weld Inspection”, to ensure that the standard of acceptability for all welding equals or exceeds the requirements of API Standard 1104, 18th Edition, “A Standard for Field Welding of Pipelines.” All radiographic films shall be the property of PG&E and all documents required by API 1104 and all reports required by Gas Standard TD-4160P shall be submitted to PG&E.
- 22.9.12 Each Work day Contractor’s Construction Superintendent will advise the PG&E on-site Lead Inspector of when and how many x-rays will need to be performed the following day.
  - 22.9.12.1 In the event Contractor fails to meet Contractor’s schedule for x-rays and if the x-ray contractor is required to wait two (2) hours or more for Contractor to be ready for x-ray, then Contractor shall pay for the x-ray contractor stand-by time which is in excess of two (2) hours. PG&E will not be invoiced for the cost of any Work delay caused by any inadequacy in Contractor’s x-ray schedule provided to PG&E the previous business day.
  - 22.9.12.2 Contractor shall pay the cost of radiographic testing of welds that fail initial testing by PG&E.
  - 22.9.12.3 The interpretation of the radiographic films shall be evaluated by PG&E on the basis of API 1104, 18th Edition. Final weld acceptance or rejection will be by PG&E; however, such acceptance or rejection shall not relieve Contractor of the sole responsibility to perform and warrant the Work in accordance with this Contract.
  - 22.9.12.4 Contractor shall provide safe and convenient access to each weld for radiographic examination.
  - 22.9.12.5 Contractor shall re-weld each weld which is not satisfactory according to the x-ray examination. No more than one attempt to repair a failed weld will be allowed. If the failed weld is not satisfactorily repaired at the first attempt, it must be removed from the pipeline. Contractor shall not be allowed schedule relief to re-weld any such failed weld. Contractor shall re-weld the failed weld at no additional cost to PG&E.

- 22.9.12.6 When the results of welding inspections show a welder is not producing satisfactory field welds, he or she will not be permitted to continue welding on the pipeline. At PG&E's request, Contractor shall remove that welder from Work performed under this Contract.
- 22.9.12.7 At PG&E's expense, PG&E reserves the right to employ any other nondestructive method of testing, such as radiographic examining, magnetic particle testing, ultrasonic testing and/or other acceptable methods.
- 22.9.12.8 Contractor shall provide a weekly report of failed welds.

22.10 Coating Gas Piping, Valves and Fittings:

- 22.10.1 Contractor shall not burn wrap off of pipe. Wrap shall either be cut, chipped, scraped or peeled. Torch cleaning of remaining residue is only appropriate preparatory to a welding operation.
- 22.10.2 When asbestos is thought to be present in existing pipe wrap, Contractor shall coordinate with the PG&E on-site representative to obtain and test a sample of the pipe wrap. Contractor shall provide for time to obtain results of test of pipe wrap in Contractor's project schedule.
- 22.10.3 Contractor shall apply protective coatings to all metallic field joints, fittings, and any other bare metal surfaces, and shall repair coatings on existing pipe and appurtenances where protective coating is damaged or has been removed during Work connected with this project. The protective coatings shall be applied in accordance with PG&E Gas Standard E-25, PG&E Gas Standard E-30, and PG&E Gas Standard E-35. The field coating on bare pipe and/or damaged wrap shall be considered a normal part of the pipeline installation, and shall be the sole responsibility of Contractor.
- 22.10.4 Prior to placement in the trench, all portions of the coated pipe, both field and plant wrapping, shall be inspected by Contractor with a PG&E-approved holiday detector ("Jeep"). The holiday detector shall be provided by Contractor. Contractor will have manufacturer's instructions and calibration data for each holiday detector on site at the location where the equipment is being used. Contractor will submit verification of proper calibration prior to start of project, will test the holiday detector to ensure accurate function prior to each use, and will submit documentation of each such test to the PG&E on-site



representative. For fusion-bonded epoxy (FBE)-coated pipe, the voltage shall be 125 volts per mil of coating thickness.

- 22.10.5 Contractor shall ensure that a PG&E representative is present during the holiday detection process. Any pipe that does not have a minimal cover at the end of the day shall be re-jeepled by Contractor prior to backfilling the following day.
- 22.10.6 Contractor shall furnish and apply protective coating to pipe in accordance with PG&E standards (see Attachment 11, "E-30, Standard, Selecting and Applying Coatings for Exposed Gas Piping" and "E-35, Standard, Selecting and Applying Coatings for Buried Transmission Pipe") including, but not limited to, training of employees in the method of application. Specific coating selections will be shown on the Issued for Construction Drawings.

22.11 Gas Piping Tie-in:

- 22.11.1 PG&E anticipates that PG&E GC will perform all tie-ins to the operating natural gas transmission pipeline. PG&E will provide Contractor the scope of work for tie-in. Contractor shall provide labor and equipment as requested by PG&E to support the tie-in performed by GC.
- 22.11.2 PG&E will schedule a tie-in meeting with Contractor approximately two (2) weeks prior to the anticipated date of tie-in to properly schedule GC's participation to meet project milestone and completion dates. If so requested by the PG&E Project Manager, Contractor will meet with PG&E again, closer to the date of actual tie-in, to finalize Work scope and schedule.
- 22.11.3 Contractor shall submit a tie-in work plan that meets the requirements for PG&E tie-in procedures (see Attachment 11, "TD-4100P-01, Hot and Cold Work Methods for Natural Gas Transmission Pipeline Shutdown and Tie-in", "TD-4100P-10 Gas Clearance Procedures for Facilities Operating Over 60 PSIG" and "TD-4100B-003, Lockout Tag Out Procedure Requirements") Indicate sniff-hole locations. Coordinate with PG&E Clearance Supervisor. Contractor shall attend clearance meetings to ensure tie-in activities are identified and assigned to PG&E and Contractor personnel.
- 22.11.4 At tie-in locations, Contractor shall excavate a bell hole for performance of tie-in operations. The minimum dimensions of the bell

hole working space shall be three (3) feet wide on each side of the pipeline, by six (6) feet long from each side of the tie-in weld location, and eighteen (18) inches below the bottom of the pipeline.

22.11.5 For each tie-in, Contractor shall excavate, wrap, backfill and compact sniff holes at each gas source location.

22.11.6 Contractor shall excavate trenches, bell holes and sniff holes so that adequate room is provided for the performance of all Work and shoring and/or sloping as required within CAL/OSHA safety standards.

22.11.7 PG&E will verify all angles for tie-in pieces.

22.11.8 Contractor shall fabricate, coat, and test the tie-in pieces as specified in PG&E Requirements of this Specification and Attachment 11 (“E-25, Standard, Field Wrapping with Cold-Applied Tape”, “E-30, Standard, Selecting and Applying Coatings for Exposed Gas Piping”, and “E-35, Standard, Selecting and Applying Coatings for Buried Transmission Pipe”) and as shown on the Construction Drawings.

22.11.8.1 Contractor shall excavate and restore tie-in and sniff holes. Provide all labor, equipment, tools, material, and supplies to support including, but not limited to, compressors, air movers, and other assistance to PG&E during tie-in as directed by the PG&E Construction Manager.

22.11.8.2 Contractor shall notify PG&E Construction Manager no later than one-(1) week prior to tie-in.

## 22.12 Fluid Storage Tanks:

22.12.1 Fluid storage tanks are required for hydrotesting and dewatering. Contractor shall the comply with the following requirements:

22.12.1.1 Contractor shall include costs for furnishing and installing fluid storage tanks in its proposal price and shall not assume that PG&E will provide fluid storage tanks unless informed by PG&E in writing prior to preparation of Contractor’s proposal.

22.12.1.2 In the event that groundwater is found to be contaminated, PG&E will dispose of water pumped from open excavations.

- 22.12.2 In the event that PG&E provides fluid storage tanks, PG&E will provide labor, materials, and equipment to complete the following work:
  - 22.12.2.1 Provide and install approximately 4 feet of braided flexible hose to couple tanks to each other
  - 22.12.2.2 Provide and install secondary containment skirt around perimeter of each tank; and
  - 22.12.2.3 Clean tanks and equipment in the event that hazardous material is present.
- 22.12.3 To obtain fluid storage tanks Contractor shall submit a PG&E "Tank Request/Return Form" (see Attachment 10, "Frac Tank Request/Return Form").
  - 22.12.3.1 In the event that PG&E does not provide fluid storage tanks, Contractor shall provide braided flexible hose and containment skirts (as described in the subparagraph, above).
  - 22.12.3.2 Contractor shall coordinate the use of tanks and provide transportation to and from job site.
  - 22.12.3.3 Discharge and manifold piping shall be welded or flanged. Do not weld to tanks.
  - 22.12.3.4 For tanks used for cleaning or pipeline retirement fluids: Support and restrain discharge piping by methods that may include, but are not limited to, straps that are fastened to the fluid storage tanks, and configure pipe discharges over the top of the tank.
  - 22.12.3.5 For tanks used for dewatering after a Hydrotest: discharge piping can be connected to valve at bottom of tank.
  - 22.12.3.6 Fill pump(s) and associated hoses shall have mechanical couplings that are secured. Cam locks are not permissible. Piping connections shall be welded or flanged.
  - 22.12.3.7 Contractor may submit threaded connections for discharge or tank piping less than 2 inches in diameter to PG&E CM for approval, however, no such approval shall be guaranteed.
  - 22.12.3.8 Clean tanks and equipment that were used for hydrotest water storage, with the exception of hazardous material.
  - 22.12.3.9 Tank cleaning will be confirmed by PG&E CM.

22.13 Strength Test Pressure Testing and Reporting:

- 22.13.1 Contractor shall perform hydrostatic test(s) or “hydro-test(s)” of installed pipelines, stations, valves, and appurtenances as described below.
- 22.13.2 Contractor shall provide storage tanks, pumps and all necessary hard piping required to perform the test. All materials and equipment utilized by Contractor for the pressure test including, but not limited to, hoses, pumps, and meters, shall be clean and in a condition to avoid contamination of hydro-test water.
- 22.13.3 Contractor shall acquire the water source and discharge location for the hydro-test water. PG&E will test the hydro-test water prior to and after the hydro-test. Contractor shall not dispose of the hydro-test water until authorized to do so by PG&E.
- 22.13.4 Contractor shall provide a detailed test procedure to the PG&E Project Manager no later than fourteen (14) calendar days prior to the planned test. Contractor’s test procedure must be approved by PG&E prior to Contractor commencing Work; however, such approval shall not relieve Contractor of the responsibility to perform and warrant the Work as provided herein.
- 22.13.5 The testing requirements are established in the Strength Test Pressure Report (STPR). Contractor shall submit hydro-test procedure to PG&E Construction Manager for approval. Upon receipt of Contractor’s test procedure, PG&E will complete Part I of the STPR and provide the partially completed form to Contractor.
- 22.13.6 Contractor’s hydro-test procedure shall include all procedures required by PG&E Gas Standard A-34 (see Attachment 11, “A-34, Standard, Piping Design and Test Requirements”) including, but not limited to, each of the following:
  - 22.13.6.1 Names and qualifications of subcontractors, if any.
  - 22.13.6.2 Contractor’s schedule and process to accomplish the pressure testing of the installed pipe.
  - 22.13.6.3 Contractor’s planned means to acquire, store, filter and dispose of the test water, if applicable.
  - 22.13.6.4 Contractor shall ensure that all pipe to be tested is firmly supported prior to filling with water. Maximum span lengths between supports shall be fourteen (14) feet, and the maximum cantilevered span shall be ten (10) feet.

- 22.13.6.5 Test pressure shall be as shown on approved STPR and, unless otherwise directed by PG&E, held for a minimum period of eight (8) hours.
- 22.13.6.6 Hydrotest plan shall include calculations that demonstrate that the configuration of dewatering system storage, conveyance, and discharge systems are sufficient to complete the Work.
- 22.13.7 Contractor shall supply all required test instruments including, but not limited to, dead weight testers at both ends of the hydro test section, spring gauge, temperature and pressure recorders with charts, recording gauge and test chart. Contractor shall calibrate all instruments prior to the test and provide the calibration certifications to the PG&E on-site representative prior to conducting the test.
- 22.13.8 Contractor shall complete Part II of the STPR, Part I of which was previously completed by Contractor's Project Engineer and reviewed by PG&E, and provide the test charts and completed STPR to the PG&E on-site representative no later than two (2) hours following completion of the test.
- 22.13.9 Test records shall be signed and dated by the PG&E Representative upon witnessing and verifying said test. Contractor shall submit for approval sketches, charts, logs, dimensions, and appurtenant information in conjunction with each s STPR. Upon completion of any test, all records shall become the property of PG&E.
- 22.13.10 Contractor shall withdraw and discharge water for the hydro tests from the location(s) that will be designated by PG&E prior to the start of construction. Contractor shall handle and discharge hydro test water in accordance with the SWPPP.
- 22.13.11 Contractor shall not proceed with any pressure test using anything other than water unless specifically authorized, in writing, by PG&E. If PG&E authorizes any portion of the pressure test be performed using other than water, PG&E will provide Contractor the specifications for such test with the written authorization to proceed.
- 22.13.12 No portion of Contractor's test head or manifold shall be pressured over 72 percent SMYS during the testing of any PG&E facilities. PG&E will review Contractor's documentation for the test equipment and examine Contractor's test equipment for condition. PG&E's inspection or acceptance of Contractor's documentation or equipment



shall not relieve Contractor of the responsibility to perform and warrant the Work performed.

- 22.13.13 If a tested section fails to maintain the specified test pressure, Contractor shall determine the location of the leakage or failure. Contractor shall remove the defective section and install, with new material, a replacement section prior to reinitiating the test and the section shall be re-tested in its entirety, all at no additional cost to PG&E. The defective section shall remain the property of PG&E. Contractor shall be liable for any additional costs including, but not limited to, damages, repair, re-testing or investigation arising from failures under testing due to defective workmanship and/or materials furnished by the Contractor.
- 22.13.14 After each pipeline section is successfully tested, Contractor shall remove all moisture from pressure testing water. The pipeline shall be dried to a dew point of -40°F. This shall be verified by the use of a calibrated dew point tester. Prior to performing the verification, Contractor shall provide calibration documentation to the PG&E on-site inspector. The PG&E on-site inspector must witness the verification.
- 22.13.15 Contractor shall release hydrostatic pressure testing water in a controlled manner and in accordance with all permits from jurisdictional agencies and PG&E requirements.
- 22.13.16 Conduct soap testing of all branch connection welds and SAVE-A-VALVE installations. Test pressure shall be 100 to 110 psig in accordance with the documents attached hereto (see Attachment 11, "A-34, Standard, Piping Design and Test Requirements"). All welds that have not received Strength Testing (hydrostatic or nitrogen) shall receive a complete NDE-VT with soap test solution at current operating pressure. Conduct tests prior to coating and backfilling.

22.14 Construction As-Built Drawings:

- 22.14.1 Contractor shall comply with all of the requirements of Attachment 12, "PG&E CAD Specifications and Guidelines. " Contractor shall coordinate with PG&E to complete the as-built process for transmission stations (see Attachment 11, "TD-4461P-22, As-Built Process for Transmission Stations"). In the event of conflict, the most stringent requirement shall prevail. If Contractor determines that there is a conflict, Contractor shall immediately advise the PG&E Project

Manager, providing the paragraph number(s) and requirements that conflict.

- 22.14.2 Contractor will provide electronic copies of the Construction Drawings to its site construction organization for the purpose of developing As-Built Drawings. One (hard copy) master set of the As-Built Drawings shall be updated daily by Contractor, formatted as described herein, and made available at job site for the duration of the project. Contractor should conform to the requirements of the PG&E Recommended Practice for Engineering Drawing Signature Requirements (see Attachment 10, "RP 4461.1, Engineering Drawing Signature Requirements")
- 22.14.3 For all Work Contractor shall update one set of Construction Drawings daily with all corrected As-Built dimensions and information. Piping symbols shall be in accordance with PG&E Gas Standards. All As-Built data including, but not limited to, each weld with depth, electrolysis test stations and any material change of direction shall be surveyed and located by GPS.
  - 22.14.3.1 Contractor shall make As-Built construction drawings available to PG&E at the job site at all times. Contractor shall maintain only one set of redline marked up drawings at the site; multiple copies are not permitted.
  - 22.14.3.2 Mark up each As-Built Drawing in a clear and legible manner. If colored pencil is used, cross-out corrections, and do not erase previous marks. If, in the opinion of the PG&E Construction Manager, the As-Built Drawing is determined to be illegible, the drawing shall be reproduced at no additional cost to PG&E.
    - 22.14.3.2.1 Use the color red to show additions and corrections.
    - 22.14.3.2.2 Use the color green to show deletions.
    - 22.14.3.2.3 Use the color blue to show comments.
- 22.14.4 To produce complete As-Built construction drawings, Contractor shall make notations and corrections, in red, on one set of construction drawings, to all of the following:
  - 22.14.4.1 Correct pipeline dimensioning and depths, using PG&E approved survey data, at all elbows, tees, services, valves, angles, risers, caps, anodes, attachments and other fittings.

- 22.14.4.2 Update all quantities on the bill of materials.
- 22.14.4.3 Identify locations of all field girth welds, angle points, weld numbers, and depths.
- 22.14.4.4 Identify changes in pipe wall thickness, grade, coating and locations of test sectioning.
- 22.14.4.5 Foundations, stub-ups, and equipment locations.
- 22.14.4.6 Building outlines and internal configurations including walls, windows, doors, fire protections, ventilation, electrical, and lighting.
- 22.14.4.7 Piping plans and sections including valves, instruments, pipe supports, and branch connections.
- 22.14.4.8 Electrical power switchgear and distribution including conduit runs and wiring.
- 22.14.4.9 Control systems and instrumentation including logic diagrams, wiring, terminations, and support racks.
- 22.14.4.10 For all dimensions and information that match the original design exactly, Contractor shall verify, by circling in red, the design dimension on construction drawings.
- 22.14.5 Prior to pressure testing, Contractor shall provide a single line drawing for attachment to the strength test pressure report indicating:
  - 22.14.5.1 All as-installed pipe lengths by size, grade, and wall thickness.
  - 22.14.5.2 All as-installed pipe fittings and appurtenances by grade, size, and wall thickness.
  - 22.14.5.3 Elevations of high and low points on the as-installed system.
  - 22.14.5.4 Location of actual test point, with elevation.
  - 22.14.5.5 Locations of dead weight testers.
- 22.14.6 Contractor shall provide a complete set of corrected As-Built piping construction drawings to PG&E in accordance with Sections 19.6, 31.7.16, and 31.8.4 through 31.8.6 of this Specification.
- 22.14.7 In the event Contractor fails, refuses or is unable, for any reason, to provide current As-Built drawings during the performance of Work under a contract, PG&E reserves the right to withhold from any payment due Contractor an amount sufficient to have such As-Built drawings created by others. By signature to this Contract, Contractor acknowledges that As-Built drawings are a material requirement in the performance of the Work.



**Pacific Gas and  
Electric Company**

**Burney K2 Gas Turbine Replacement Project**  
**Project order number: 30603707**  
**WORK SCOPE DOCUMENT**  
Issue Date: 7/29/15

**Project Summary**

PG&E is initiating the Burney K2 Gas Turbine Replacement project to replace the existing Burney K2 unit with a new unit. This project will increase system reliability by eliminating an obsolete and failure-prone unit.

The Burney Compressor Station is the second compressor station along the Redwood Gas Transmission Path, which supports Line 400/401 gas main transmission. The equipment is used to compress (increase gas pressure) natural gas to allow continuous uninterrupted flow on our backbone transmission pipeline.

The reliability of Line 400/401 is critical to maintaining required gas flow to PG&E's Redwood Path customers. The problem with the current unit includes potential fire, lack of manufacture/vendor support, and maintenance parts. The need for a major overhaul or modification is imminent and should be completed prior to potential failure. Line 400/401 gas flow would have to be modified if the Burney Compressor is lost, potentially impacting customers and increasing the cost of gas in California.

**Work Completed To-Date**

1. *30% Design Deliverables:* In 2014, PG&E engaged Gulf Interstate Engineering to prepare the 30% Design Deliverables package. These deliverables are included with this RFP in Attachment 17. The electronic files in their native format will be provided to the successful contractor for further development.

The 30% Design Deliverables were based on two (2) Solar Taurus 70 compressor units in separate buildings located in an undisturbed area of the existing compressor station site.

The Scope of Work provided in the next section details the equipment and features of the proposed K2 Replacement Project. It is the intent of this RFP that a minimum of changes be made to the existing 30% Design Deliverables. However, subsequent to completion of the 30% package, it was decided to install one (1) Solar Titan 130 unit instead of the two (2) Taurus 70 units. Also, it was determined that the existing station discharge gas cooler needs to be expanded as described in the next section.

2. *Air Permit to Construct:* PG&E has obtained the draft Authority to Construct (ATC) and is currently finalizing the permit with the local air district.

The air permit application was based on two (2) Solar Taurus 70 compressor units in separate buildings located in an undisturbed area of the existing compressor station site.

3. *Gas Turbine Compressor Unit RFP:* PG&E has issued an RFP for turbine-compressor units to 3 manufacturers. The RFP included a technical specification and design process conditions.

The Turbine-Compressor Unit RFP was based on two equipment configuration options. One option is a single unit that would satisfy all basic design conditions. The other option is a two-unit configuration that would meet the same basic design conditions, plus some additional design conditions.

PG&E has selected a Solar Titan 130 unit.

### **Detailed Scope of Work**

#### **1. Engineering Studies**

- Contractor shall hire qualified subcontractors to perform the following studies, subject to approval by PG&E.
  - Piping Flexibility analysis. This may be performed by the Contractor directly if approved by PG&E in advance.
  - Noise Study, including pre-construction measurements, noise modeling, recommendations for mitigation techniques, and post-construction noise measurement.
  - Geotechnical Investigation for the design of building and equipment foundations.
- Contractor shall participate in the Process Hazards Analysis (PHA) to be conducted by PG&E personnel approximately 2 weeks after completion of the 30% deliverable set. PG&E has an in-house PHA department that will facilitate the session and provide workshop materials in advance.
- Contractor shall participate in the Pre-Startup Safety Review (PSSR) to be conducted by PG&E personnel. This session will be facilitated by PG&E's in-house PHA department. Workshop materials will be distributed in advance.

#### **2. Demolition of Existing Unit K-2**

- The demolition of the existing K-2 unit includes but is not limited to, control systems, above and underground piping, conduit and all auxiliary systems. The demolition of the existing building and foundation for K-2 is not in-scope at this time. Contractor shall prepare a cost estimate to retire the existing compressor building and foundation. If PG&E elects to proceed with the demolition, this work will be done under a change order.
- The K-2 unit that will be replaced is a GE LM-1500 coupled to a Rolls Royce (Cooper Bessemer) RFA 36 centrifugal compressor.
- No existing K-2 systems shall be reused without the approval of PG&E.

### 3. New Compressor Unit

- The new BK-1 compressor unit shall be a Solar Titan 130 unit coupled with Solar C752 compressor. The requirements for this package are included in Attachment 7, the Burney BK-1 Gas Turbine / Centrifugal Compression Package Specifications and Attachment 9, the Burney CS Package Proposal by Solar Turbines.
- Contractor shall install all systems necessary to accomplish the objectives listed herein specific to the new BK-1 turbine/compressor packages.
- Contractor shall be responsible for coordination, interface, delivery, installation, start-up, and commissioning of BK-1.
- Install new unit suction and discharge valves.
- Install new BK-1 hot recycle valve.
- Install new unit piping as necessary to accommodate the new gas compressors.

### 4. Station and Unit drawings

- New drawings shall be generated to reflect the new facilities.
- Contractor shall update, obsolete or supersede all existing station drawings to reflect the as-left, post construction condition specific to the scope of this work.
- Contractor shall research all existing drawings maintained by PG&E in electronic format to determine the extent of new and revised drawing requirements. These drawings are available to all contract employees with a PG&E LanID using ELS/EDMS.

### 5. Station and Auxiliary Systems

- Suction Scrubbers/Separation
  - The existing separators will be evaluated to ensure they will meet the design conditions for the new compressor unit. Contractor shall perform the necessary calculations and modeling using an in-house Subject Matter Expert or qualified third party. The manufacturer of the existing equipment shall be consulted. The deliverable for this effort is a comprehensive report with sufficient data and detail to support a conclusion that the existing equipment is adequate or a recommendation for supplemental capacity or replacement.
  - Detailed engineering and construction specific to the separation equipment will initially be out of scope. If Company decides to implement any necessary modifications, this work will be done as a change order.



## 6. Buildings

- Contractor shall develop new Engineering Specification documents for use in procuring each new building. These documents shall use the same format as Attachment 7 in order to be used by PG&E for future projects
- BK-1 Compressor Building
  - The new compressor unit shall be located in a separate, new building with new foundation. The building will be located south and west of the existing K-2 building (see drawing 489695 in Attachment 7).
  - Option to the above: Contractor shall prepare a cost estimate to retire the existing compressor building and foundation and install the new building in the same approximate location. The cost estimate shall address related issues such as outage duration, costs to minimize outages, benefits of working in an idled facility, etc. If PG&E elects to proceed with the demolition, this work will be done under a change order.
- Auxiliary Building
  - A new auxiliary building shall be installed at the southwest corner of the BCS as shown in the plot plan, drawing# 489695, provided in Attachment 7 and layout sketch shown in Attachment 17 (see "Auxiliary Building Sketch"). It shall have a "quiet" office/work space with HVAC, LAN and telephone with storage space for prints and documentation. Except for the storage space for prints and documentation, no other furniture or fixtures are included in Contractor's proposal price.
  - A new air compressor system shall be installed in the new auxiliary building.
  - A new standby generator shall be installed in the new auxiliary building.
- Fuel Gas Building
  - A new building will be installed to house the fuel gas and domestic gas regulation and filtration equipment.

## 7. Air compression facilities:

- New air compression units shall be installed to support all air requirements for the new BK-1 unit.
- Air dryer systems shall be installed to meet all air quality requirements of the BK-1 unit.
- The air compressors shall have adequate capacity and redundancy to allow the removal of one unit from service for maintenance and maintain all station air requirements. Two (2) 100-percent rated units are to be supplied.

- Contractor shall develop new Engineering Specification documents for use in procuring the compressed air system. These documents shall use the same format as Attachment 7 in order to be used by PG&E for future projects.

#### 8. Station Piping

- The station piping will be modeled using commercial software that is compatible with natural gas compressor stations (Contractor to state software trade name in their proposal). It is PG&E's goal to limit the overall station pressure drop to 10 psi. If the station pressure drop is calculated to exceed 10 psi, Contractor will propose and estimate the modifications necessary to achieve this value.
- Design Conditions for station gas flowrates and pressures are included in Attachment 7, compressor unit specifications and Attachment 3, Design Basis Memorandum.
- Detailed engineering and construction specific to the station piping to address pressure drop issues will initially be out of scope. If Company decides to implement the necessary piping modifications, this work will be done as a change order.
- Modify station piping to accommodate the removal of K-2 and installation of new unit BK-1, valves, instrumentation and any other items included within the scope of this specification.
- Evaluate if the existing cold recycle piping system is adequate. Replace as necessary.

#### 9. Gas Coolers

- The existing station gas coolers shall be evaluated by Contractor to determine what the modifications and cost would be required to limit station discharge temperatures to 120 F on Lines 400 and 401 with an ambient temperature of 90F and a flange-flange pressure drop of 2 psi. The existing discharge gas cooler was built in 1969 and has an approximate capacity of 1200 MMScfd (available data will be provided to the successful Contractor).

#### 10. Equipment to be salvaged and made available to PG&E

- PG&E will have the option to retain or sell the following K-2 equipment. Contractor shall include in their proposal line item costs and schedule impacts (for each item) to remove this equipment and place it in a lay-down area within the BCS yard for PG&E to salvage or store.
- LM-1500 gas turbine.
- Gas compressor.
- K-2 lube oil cooler.

- If PG&E elects not to salvage any of this equipment, Contractor shall dispose of all equipment.
- Any additional equipment which PG&E wishes to salvage will be considered out of scope and addressed by change order, removed by PG&E personnel or third-party Contractors in advance of Contractor's demolition Work.

#### 11. Electrical Facilities

- Contractor shall evaluate and upgrade, if required, any and all electrical system requirements to support all new, modified and existing facilities.
- All station electrical systems are to be evaluated to determine if upgrades are necessary to accomplish the objectives outlined in this Specification. Evaluation shall consider all requirements for the replacement of K-2. This includes but is not limited to the station UPS, DC and AC systems. If upgrades of these systems are necessary, engineering and construction for the upgrades will be considered in the scope of this Specification.
- A new 480V electrical supply will be made available at the station fence line. The exact location where this 480V supply source will enter the plant will be determined by PG&E. Currently it is expected this 480V supply will come from the west side of the plant at the southern half of BCS.
- The 12.47kV/480V transformer and systems will be out of the scope of this specification.
- All existing, new and future station electrical loads shall be supported from the new 480V systems. Provisions for future load will also be included. For estimating and design purposes, see equipment sizing outlined in Attachment 9, the Single Line Diagrams and Electrical Load List from preliminary engineering (Attachment 14).

#### 12. Standby Generator

- Contractor shall verify the generator sizing of 750 kW as outlined in Attachment 14 from preliminary engineering. Detailed engineering and construction for the replacement of the standby generator shall be considered in-scope for this specification.
- Contractor shall connect the existing standby generator into the revised station electrical system so that it can support all loads required for operation of the station, including gas cooling.
- Contractor shall develop new Engineering Specification documents for use in procuring the standby generator. These documents shall use the same format as Attachment 7 in order to be used by PG&E for future projects.

### 13. New Station Valves

- Contractor shall be responsible to evaluate and for selection, installation and commissioning of all new station valves.
- Station Cold Recycle and Compression Bypass Valves:
  - Contractor shall replace the existing station cold recycle valve with new valve(s). These shall be adequate to prevent a surge condition of BK-1 when operating separately or together.
  - The cold recycle valve shall also be sized to enable recycle operation to meet operating points outside of the compressor map, as shown in Design Basis Memorandum.

### 14. Fire Water Suppression System

- Contractor shall install a new fire suppression system for the compressor buildings and pertinent areas of the auxiliary building. Contractor shall either use an in-house Subject Matter Expert to evaluate alternate systems and design the fire suppression system. Contractor shall consult with the equipment manufacturer as well as PG&E to maintain consistency with other PG&E facilities.
- The fire suppression system may include the MCC area of the auxiliary building pending evaluation.

### 15. Blowdown Silencer

- A new blowdown silencer will be installed to handle the volumes associated with two (2) different systems: station discharge and unit blowdown as shown on the P&ID provided in Attachment 5.
- The blowdown silencer will have two (2) separate connections, one for each service.
- Contractor shall develop new Engineering Specification documents for use in procuring the blowdown silencer. These documents shall use the same format as Attachment 7.

### 16. Raw Water System

- Replace existing water well and include particulate filters (sock type) and treatment system

### 17. Instrumentation and Controls

- The station PLC will be replaced. The product to be used will be defined at a later date by PG&E.

- All station field devices, transmitters and wiring will be replaced with new equipment.
  - Reference will be identified for Proposed Burney Main Gas Piping and Instrumentation Diagram for number and location of devices and transmitters.
  - Contractor shall be responsible for all Work between and including all field devices and transmitters, wiring, I/O devices and if necessary conduit.
  - For estimating and design purposes, Contractor shall assume all new I/O devices will be located in the control room. PG&E will consider remote I/O devices (not in the control room). PG&E will have final approval for any new I/O device not located in the control room and may request Contractor to install wiring between remote I/O device and control room.
- PG&E will define vendor and model to be used for the I/O device and field devices.
- Replacement of station PLC hardware and wiring between the I/O devices and the station PLC may be performed by PG&E General Construction.
- Software/logic development for the station control system will be performed by PG&E
- Contractor shall be responsible for all drawings and documentation related to the PG&E scope of work. PG&E will provide guidance in the development of this documentation as related to the PG&E scope of work.
- Contractor shall be responsible for updating the station Control Philosophy PG&E will provide guidance and content as related to the PG&E scope of work. PG&E will provide content for the station control functions per PG&E scope.
- PG&E General Construction may be responsible to patch openings in the controls panel.
- Contractor shall finish paint the control and MCC cabinets. The final color shall be specified by PG&E.
- Start-up and commissioning of software/logic for the station control system will be performed jointly by PG&E and Contractor. Contractor shall develop the commissioning and start-up procedures using content and guidance provided by PG&E for the PG&E scope of work.
- Remove existing hard-wired station ESD system in lieu of a software version to reside in the station PLC. New electrical sourced Emergency Shutdown System (ESD) will be compliant with all provisions of G.O. 112E and be consistent with

standard PG&E designs.

- PG&E General Construction may be responsible to replace, install patches or blanks over remaining openings in the control panel.

#### 18. Miscellaneous Station Upgrades

- Reconfigure existing security system as necessary to correspond with the relocation of station fencing.
- The existing check meters for Lines 400 and 401 shall be evaluated and possibly replaced. This issue will initially be out of scope. If Company decides to implement the necessary meter upgrades, this work will be done as a change order.
- Replace V-40 Limitorque actuator.
- Replace Brooks-Brodie station pressurizing valve.
- Replace L-400 station suction, discharge, and mainline valves/actuators (V-1, V-2, and MLV-82.33).
- Replace Shafer actuators on MLV-82.34, V-30, and V-2.
- Replace all station ESD push buttons with a style approved by PG&E (to be determined).
- Replace station blowdown valves, V-C and V-P.
- Paint all above ground pipe and buildings.

#### 19. Excluded Items

- Any modifications associated with new District office building located adjacent to Burney Compressor Station.
- Odorant & gas chromatograph equipment and building.
- Sewage system or piping, other than for new auxiliary building.
- Upgrades to existing station security system.



## **EXHIBIT B**

**GENERAL CONDITIONS**

**ENGINEERING, PROCUREMENT, CONSTRUCTION**

**OF**

**NATURAL GAS & ELECTRIC TRANSMISSION AND DISTRIBUTION FACILITIES**

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**PART A:**  
**CONSTRUCTION CONDITIONS**

**ARTICLE 1.**  
**DEFINITIONS**

When used in this Contract, the following terms have the specified meaning:

**"As directed," "as required," "as permitted," "approved," "written approval," "approval," "acceptable," "satisfactory,"** or similar terms, whether appearing as capitalized or lower case words, shall mean by or to PG&E unless otherwise specified.

**"Change Order"**: A Contract document signed by both Parties which modifies the price, schedule, or other terms of the Contract.

**"Construction Schedule"** or **"Schedule"**: Contractor's construction schedule, a document required by PG&E, that identifies the sequence and timing of Work and other activities necessary to meet Contract completion dates.

**"Contract"** or **"Agreement"**: This executed agreement, between PG&E and Contractor, including the Specification and any other materials specifically incorporated therein.

**"Contractor"**: The Party entering into this Contract with PG&E to perform the Work.

**"Days"**: Shall mean calendar days unless otherwise specified.

**"Facilities"**: Properties of the Joint Trench Parties or PG&E, including without limitation, items which generally comprise the PG&E gas or electric transmission or distribution system, such as the following: gas pipe and fittings (including valves, flow control, cathodic protection, regulation and metering devices), electric cable, conduit, poles, and other gas or electric equipment, boxes, vaults, and related material.

**"Hazardous Materials"** and **"Hazardous Waste"**: Any material defined as such in any local, state or federal rule, regulation, law or code for the location in which the Work is performed. This includes, but is not limited to, the definition of Hazardous Material and Hazardous Waste set forth in the California Health and Safety Code, Division 20, Chapter 6.95.

**"Joint Trench Parties"**: The additional party or parties, if any, for whom Contractor is performing Work under the Contract.

**"LM&E Sheet"**: Daily Statement of Labor, Material, and Equipment (Form 62-5687) completed by Contractor, and attached hereto in form as Exhibit 5.

**"Party"** or **"Parties"**: As applicable, PG&E or Contractor or both.

**"PG&E"**: Pacific Gas and Electric Company, a California corporation.

**"Proposal"**: The bid quotation and package to perform Work under this Contract or an individual CWA as submitted by Contractor to PG&E.

**"Rental Rate Blue Book"**: Rental Rate Blue Book for Construction Equipment.

**"Specification":** PG&E's documents and drawings including the specific conditions and these General Conditions, all of which set forth the requirements for performance of the Work and which shall become incorporated in the Contract.

**"Subcontract":** An agreement between Contractor and Subcontractor or between Subcontractors at any level for a portion of the Work under this Specification.

**"Subcontractor":** Party or parties entering into a Subcontract with Contractor or another Subcontractor to perform Work. The obligations of Contractor set forth in this Contract shall also apply to Subcontractors regardless of level or tier.

**"Work":** The construction contemplated by the Contract, including all labor necessary to complete such construction, all material and equipment incorporated or to be incorporated in such construction and all services, facilities, tools and equipment necessary to complete such construction.

**"Work RFP":** A request by PG&E for a Proposal by Contractor to perform Work under this Specification.

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## **ARTICLE 2. PROPOSALS**

- 2.1 **FORM:** When required by a Work RFP, Contractor's Proposal shall be made on a Proposal form supplied by PG&E. Contractor's Proposal shall be enclosed in a sealed envelope distinctly marked with the title of the Work, Specification Number, and the word "Proposal," and delivered to the address stated in the Work RFP on or prior to the time specified. The Proposal shall be signed with the full name and local address of Contractor; if a partnership or joint venture, by a member thereof with the name and address of each member; if a corporation, by an officer in the corporate name and with the corporate seal. Late Proposals will be subject to disqualification.
- 2.2 **INFORMATION WITHIN PROPOSAL:** Contractor shall submit as part of the Proposal the following information which shall be under Contractor's letterhead: (i) requested information regarding the plant and equipment which Contractor intends to use in the Work; (ii) percentage fees applicable to Sections 8.6.1 through 8.6.4 for Cost-Plus Work charged by Subcontractors; and (iii) if Section 8.5 is included in the Specification, Contractor shall furnish the data required by 8.5(i) therein.
- 2.2.1 **COMPLIANCE WITH EQUAL OPPORTUNITY LAWS:** Contractor must describe with its submission how it will comply with the requirements in Exhibit 1 of the "PG&E SUPPLIER DIVERSITY PROGRAM POLICY". The requirements of Exhibit 1 and the Contractor's response shall be deemed incorporated into the Contract.
- 2.2.2 **ESTIMATED QUANTITIES AND WEIGHTS:** Quantities, weights, or data made available to Contractor by PG&E for preparation of its proposal or for performance of the Work shall not relieve Bidder or Contractor of the responsibility to satisfy itself through investigations as to conditions affecting the cost and performance of the Work. Estimated quantities and information submitted are the best available at the time; however, PG&E assumes no responsibility for the correctness of such information or for Contractor's conclusions drawn therefrom.
- 2.2.3 **CONTRACTOR'S LICENSE LAW:** To qualify for Work subject to the Contractor's License Law, Chapter 9 of Division 3 of the Business and Professions Code of the State of California, Contractor's Proposal shall include a statement that Contractor is licensed under the law and shall indicate the type, number and the expiration date of the license.



- 2.2.4 RETURN OF MATERIAL: Contractor's Proposal shall be accompanied by the Specification, drawings, and other loaned information. Contractor shall sign in the spaces provided in the Specification and on each drawing used in preparing its Proposal unless otherwise specified.
- 2.3 SUBMISSION OF PROPOSAL: Once submitted, a Proposal may not be withdrawn by Contractor until its expiration date as provided in the Work RFP. A proposal may be accepted by PG&E up to the Proposal expiration date, and if not so accepted in writing, shall be deemed declined.
- 2.4 PROPOSAL EVALUATION: Each Proposal will be evaluated using a formula of weighted and defined criteria including, among other things, the strength of its proposed compliance with PG&E's Supplier Diversity Program Policy.
- 2.5 TIME: Contractor shall perform the Work in as short a time as practicable consistent with good workmanship and without overtime, unless otherwise specified. Time quoted by Contractor for completion of the Work will be an important consideration in making the award of Contract. The time so stated will be incorporated into the Contract. Time is of the essence.
- 2.6 REJECTION: PG&E RESERVES THE RIGHT TO REJECT ANY AND ALL PROPOSALS AND TO ACCEPT OTHER THAN THE LOWEST PROPOSAL.

### **ARTICLE 3. PROJECT DATA AND SPECIFICATIONS**

- 3.1 INFORMATION FURNISHED BY PG&E: Data made available to Contractor by PG&E for preparing Contractor's Proposal and data made available to Contractor by PG&E during performance of the Work shall not relieve Contractor of responsibility for determining, through independent investigation if desired, the conditions affecting the cost and performance of the Work. PG&E makes no representation as to the completeness of the data and is not responsible for Contractor's conclusions drawn therefrom.
- 3.2 DIMENSIONS: Written or computed dimensions shall be used rather than scaled dimensions. Dimensions which tie into existing work shall be verified by Contractor at the worksite prior to commencing the Work. No claim will be honored which is a result of failure to comply with this requirement.
- 3.3 PG&E DRAWINGS AND SPECIFICATION: As soon as possible after award of Contract, PG&E's approved construction drawings will be provided to Contractor. Bidding drawings shall not be used for construction purposes unless otherwise authorized in writing by PG&E. PG&E anticipates that revisions may be made to the Contract drawings prior to the time they are issued as "Approved for Construction" and to the approved drawings from time to time during the Work. These revisions are expected to be minor changes in dimensions and in embedded items which may require Contractor to change its proposed construction methods and sequence of operations. Contractor shall plan its operations accordingly to accommodate the changes. Changes, as such, will not necessarily involve additional cost to Contractor. An increase or decrease in material quantities will be paid for or deducted under the appropriate Contract pricing items. Where the change involves an increase in other costs to Contractor, PG&E will pay for the costs that are considered justifiable by PG&E. PG&E shall receive credit from Contractor for any reduction in Contractor's costs caused by the changes. However, PG&E reserves the right to be the final judge as to the amount of payments made after the facts are presented and evaluated.
- 3.3.1 PERMITS: If Contractor decides that the drawings and Specification do not comply with laws, rules and regulations, Contractor shall notify PG&E in writing at the time its Proposal is submitted and shall indicate as a separate lump-sum item an adjustment to the Proposal to cover the cost of compliance.

- 3.3.2 **INCONSISTENCIES:** The Specification and drawings are complementary and are intended to be consistent with each other. Contractor shall promptly report in writing to PG&E any discrepancies, errors, or inconsistencies in the Specification and drawings.
- 3.4 **CONTRACTOR'S DRAWINGS AND SPECIFICATION:** If Contractor prepares specifications, calculations, and drawings, they shall be approved in writing by PG&E prior to use. Notwithstanding such approval, Contractor shall be responsible for the accuracy, practicability, and correctness of its specifications, calculations, and drawings, none of which shall operate to change the Specification or PG&E's drawings unless Contractor submits a written statement clearly describing the specific changes to the Specification or PG&E's drawings and obtains PG&E's written prior approval of the changes. In the event of conflict between this Specification or PG&E's drawings and Contractor's specifications, calculations, or drawings, the former shall prevail. Engineering Work performed by Contractor shall be in accordance with the California Civil and Professional Engineers Act.
- 3.5 **CHANGES TO SPECIFICATIONS AND DRAWINGS:** Requests by Contractor for changes in the requirements of the Specification and PG&E's drawings shall be specifically identified in writing and brought to the attention of PG&E for written approval of PG&E. No changes shall be made without such written approval.
- 3.6 **REFERENCES:** References within the Specification to standard specifications, codes, and requirements of organizations such as the American Society for Testing Materials (ASTM), the American Institute of Steel Construction (AISC), and others are referenced to the latest issue thereof, unless otherwise specified. Requirements of referenced specifications shall be deemed a part of this Specification, except that in the event of a conflict between the requirements of this Specification and those of the referenced specifications, the most stringent shall govern.

#### **ARTICLE 4. PRICING AND PAYMENTS**

- 4.1 **PRICING OF WORK:** Contractor is requested to quote prices for the Work as classified under the items in the Proposal Form. Prices quoted shall include all taxes incurred in the performance of the Work, but shall exclude the premium for any surety bond. PG&E will not honor claims by Contractor resulting from unbalanced bid prices where Contractor has quoted unit prices that are either over or under Contractor's estimated cost.
- 4.2 **COMPENSATION:** Consideration to be paid Contractor by PG&E will be a sum calculated as set forth in the Contract and based on the prices quoted by Contractor in its Proposal. Except for work specifically excluded, Work necessary to make a complete installation ready for use or operation shall be considered as included in the price or prices quoted for the Work, whether or not specifically classified for payment under the items of the Proposal.
- 4.2.1 **LUMP-SUM ITEMS:** Work classified for payment on a lump-sum basis will not be paid for under unit price items, unless specified. A Proposal shall include the proposed progress payment schedule for lump-sum basis Work.
- 4.2.2 **UNIT-PRICE BASIS:** When invoices include Work performed on unit-price basis, Contractor shall attach a list stating the unit price item numbers, unit prices, quantities, dollar amounts and other information as required to identify the Work.
- 4.2.3 **COST-PLUS BASIS:** A LM&E Sheet must be completed for all Work performed on a cost plus basis including, but not limited to, additional or changed Work. Contractor may use its own form in place of the PG&E LM&E Sheet as long as (i) it contains all the same information as is to be reported on PG&E's LM&E Sheet and (ii) the information clearly matches the categories of information found on PG&E's LM&E Sheet. Contractor's representative shall prepare the LM&E Sheet daily, providing sufficient detail of Work

performed, including labor employed by Contractor and others performing Work, materials drawn from Contractor's stock, use of Contractor's equipment and rental of equipment from others by Contractor. PG&E shall approve the LM&E Sheet daily and retain a copy of the approved LM&E Sheet for comparison to Contractor's actual billing and Contractor's invoice support shall include a copy of the approved LM&E Sheet, receipted bills for materials, subcontracted Work and rented tools and equipment. PG&E shall have the right to inspect and sign the delivery or shipping documents for all tools, equipment, and materials charged to or credited out of cost-plus Work as they are received or removed. PG&E shall have the option of auditing the Contractor's records for cost-plus Work.

- 4.2.4 HOURLY RATE BASIS: A LM&E Sheet must be completed for all Work performed on an hourly rate basis including, but not limited to, additional or changed Work, following the procedures and requirements of Section 4.2.3.
- 4.3 INCIDENTAL WORK: During the progress of the Work, Contractor may be required by PG&E to perform certain selected operations which will require Contractor to pay shift differentials or premium time beyond the normal workday or workweek. For this Work, Contractor will be reimbursed the direct premium cost of labor based upon established Contract rates or applicable union wage rates in effect, plus applicable taxes. No additional fee for overhead or profit will be allowed. Examples of this Work may include clearances, work to expedite certain features, work performed in assisting PG&E in conducting testing and "startup," and certain incidental overtime performed for PG&E's convenience.
- 4.3.1 CONTRACTOR'S CONVENIENCE: Should Contractor elect to perform any phase of the Work on a premium time basis in order to meet the Construction Schedule or for Contractor's convenience, or if required by PG&E pursuant to Section 9.4, Contractor shall do so at no incremental cost to PG&E.
- 4.3.2 PG&E'S CONVENIENCE: If, in order to meet certain conditions, PG&E places the Work on an accelerated workweek, Contractor will be reimbursed. No reimbursement will be made except as authorized by a Change Order.
- 4.4 INVOICES: Contractor shall submit itemized invoices for completed Work accepted by PG&E, unless otherwise agreed. Invoices submitted by Contractor to PG&E for payment must be in accordance with the applicable CWA and include the applicable CWA number.
- 4.4.1 SUPPLIER DIVERSITY DISBURSEMENT RECORD: With each invoice, Contractor shall submit an updated List of Subcontractors and Disbursement Record (Exhibit 1-A) with a current accounting of actual Subcontractor payments as of the date of the invoice (Exhibit 1-A, Column 6).
- 4.5 PROGRESS PAYMENTS: If specified under the applicable Contract Work Authorization, then PG&E may retain a percentage of the Contract price until final acceptance of the Work; payment of the retention shall be in accordance with Section 4.6 below. Contractor shall submit monthly for PG&E's acceptance four copies of a written contract progress estimate setting forth the quantities of Work satisfactorily performed to date and invoices covering the Contract price applicable to the Work unless otherwise directed.
- 4.5.1 LIEN RELEASES: If requested by PG&E, Contractor must furnish conditional lien releases with each progress payment for Contractor and all Subcontractors totaling the amount requested in the progress payment estimate and covering the same time period as the estimate.
- 4.6 FINAL PAYMENTS: As soon as practicable after satisfactory completion of all Work, Contractor shall submit four copies of a final invoice to PG&E certifying to the completion of the Work and setting forth the total progress payments due Contractor less amount withheld and previous payments. Contractor shall also submit four copies of a second invoice in setting forth the balance

of the Contract price, including any retention amount. Invoices shall include any adjustment in labor or other costs if provision for adjustment is made in these General Conditions. PG&E will thereupon prepare certificates of payment for each. After receipt of invoices, PG&E will pay the amount due Contractor under the first described invoice after the final acceptance of Work performed under the Contract and receipt of lien releases and subject to receipt from Contractor of information required under PG&E's insurance program.

- 4.6.1 LIEN RELEASE: Prior to submitting a final invoice, Contractor must furnish conditionallien releases for Contractor and Subcontractors covering all labor, materials, and equipment for which a lien could be filed. Within 30 days after final payment, Contractor shall provide unconditional final lien releases for Contractor and all Subcontractors.
- 4.7 JOINT CHECKS: Should PG&E deem it necessary, checks for payment in Sections 4.5 and 4.6 may be issued to Contractor and Subcontractors or suppliers jointly.
- 4.8 CLAIMS: If Contractor claims extra compensation or time from PG&E arising out of PG&E's administration or interpretation of the Contract or other action on the part of PG&E, Contractor shall submit to PG&E a written statement supporting the claim as soon as practicable but not more than 30 days after the action or decision giving rise to the claim. Portions of Contractor's claim incurred prior to written notification to PG&E shall be considered waived and failure to submit a statement within 30 days shall constitute a waiver of the entire claim. Acceptance by Contractor of the final payment hereunder shall be deemed a waiver by Contractor of claims against PG&E.
- 4.8.1 CLAIMS AGAINST CONTRACTOR: Before Contractor is entitled to the final payment, Contractor shall, if requested by PG&E, furnish satisfactory evidence to PG&E that valid claims against Contractor or a Subcontractor have been paid.
- 4.9 WITHHOLDING FUNDS: PG&E may retain sufficient funds from payments due Contractor to repair or replace Work judged defective or incomplete by PG&E, to provide security for property damage liability as set forth in Section B-2.2, and to discharge liens as specified in Section 5.14.
- 4.10 LIABILITY: Neither acceptance of the Work by PG&E nor payment for the Work shall relieve Contractor from liability under the indemnity or guarantees contained in or implied by the Contract.
- 4.11 BOND REQUIREMENTS: If requested by PG&E, Contractor shall, within 5 days of request, obtain a payment and performance bond in the amount specified by PG&E up to 100 percent of the Contract price in a form and with a surety acceptable to PG&E. PG&E will reimburse Contractor for the bond separately within 21 days of receipt from Contractor of the surety company's invoice. Failure of Contractor to obtain the bond as specified will be cause to cancel the Contract.
- 4.12 ADJUSTMENTS: Contractor shall promptly adjust any inaccuracy in the billings. Adjustments shall accrue interest, compounded monthly, at a rate equal to the prime rate charged by the Bank of America, N.A., Charlotte, North Carolina, at the beginning of each month, from the date of payment of the invoice being adjusted to the date that the adjustment is paid.

**ARTICLE 5.  
CERTAIN OBLIGATIONS  
AND RESPONSIBILITIES OF CONTRACTOR**

- 5.1 WORKSITE CONDITIONS: It will be assumed that Contractor has visited the worksite and that the Proposal is based on a full knowledge of all conditions that would affect the cost and conduct of the

## **ARTICLE 8.**

### **CHANGED CONDITIONS**

- 8.1 **CONTRACT CHANGE ORDERS:** PG&E may require Contractor to perform additional work of a nature similar or related to the Work under the Contract or may require changes or reductions in the Work or in the provisions governing the Work. Additional Work or changes shall be performed by Contractor only when authorized in writing and signed by PG&E. Contractor shall immediately notify the PG&E representative of any changes, additional Work, or conflicts or discrepancies in the Work, in writing, prior to performing that portion of the Work. Authorization for payment will be by Change Order. No subsequent claim will be honored for intangible effects or time lost resulting from Work covered and paid for by Change Order. Pricing in the Change Order shall include indirect or intangible costs.
- 8.2 **CHANGED CONDITIONS:** Contractor shall within 72 hours after encountering changed construction conditions or within 5 business days after encountering changed engineering conditions, and before conditions are disturbed, notify PG&E in writing that (i) subsurface or hidden physical conditions at the worksite differ materially from those specified or (ii) unknown physical conditions at the worksite, of an unusual nature, differ materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for by this Specification. If PG&E agrees with Contractor's claim, an equitable adjustment will be made and a Change Order will be issued. No claim will be allowed unless Contractor has given timely notice.
- 8.3 **WORK NOT COVERED:** If PG&E requires Contractor to perform Work that is in Contractor's opinion not covered by prices under either the Contract or a Change Order and for which Contractor intends to make a claim, Contractor shall notify PG&E in writing prior to starting the Work, or its subsequent claim will not be considered. If PG&E agrees with Contractor's claim, Contractor will be notified in writing and a Change Order will be issued to cover all or part of the claim. If PG&E does not agree with Contractor's claim, Contractor will be notified in writing. Unless Contractor states in writing within 7 days that it will not accept PG&E's decision and that Contractor intends to make another claim, the subject will be considered closed and will not be reopened at a later date.
- 8.4 **ADJUSTMENT DUE TO CHANGES IN WAGE RATES:** For this Contract, Contractor shall provide to PG&E its applicable wage rates in effect on the date of Contractor's signature to this Contract together with the date(s) on which Contractor anticipates an increase in wage rates that may occur during the Contract period as a result of negotiations between the construction industry and the unions involved. Contractor shall also advise PG&E of any decrease in wage rates.
- 8.4.1 No increase in wage rates will be accepted during the term of this Contract unless Contractor has submitted to PG&E, with the project-specific proposal, the date and amount of the anticipated wage rate increase together with Contractor's anticipated impact on the project budget and the increase has been accepted by PG&E, in writing, with the award of Work.
- 8.4.2 **APPLICATION:** Reimbursement will apply only to field labor employed directly by Contractor and engaged directly and exclusively in the performance of the Work at the worksite and will not apply to Contractor's office or clerical personnel, superintendents or other supervisory personnel other than job foreman, nor to Subcontractors' employees. Contractor will not be reimbursed for increases in wage rates that were negotiated prior to the date of the Contract and that provide for future automatic wage increases of known amounts nor any portion of the wages paid as a bonus. In computing authorized reimbursement, wage rates used shall include subsistence, travel time payments, health, welfare, vacation, pension fund payments, and other "fringe" benefits that Contractor is required to pay by union agreement.



- 8.4.3 CREDITS: In the event that negotiations between the construction industry and the unions involved result in a decrease in wages rates, Contractor shall credit PG&E in payments due Contractor to the extent of 100 percent of the total savings resulting from decreases, computed on the basis specified.
- 8.4.4 PAYROLL RECORDS: Adjustments of the Contract price for changes in wage rates shall be computed from Contractor's labor payrolls, and Contractor shall furnish PG&E copies of payrolls for this purpose when so requested.
- 8.4.5 INVOICES: Invoices covering adjustments due to changes in wage rates for Work performed in any one month shall be presented within 60 days after the end of that month or such invoices may not be accepted for payment.
- 8.4.6 NO FEE: Amounts payable under this section shall be actual costs without fee for Contractor's home office overhead or profit.
- 8.5 ADJUSTMENT DUE TO CHANGES IN MATERIAL COSTS: No increase in material costs will be accepted during the term of this Contract.- If Contractor has submitted to PG&E, with the project-specific proposal, the date on which quotations from specific suppliers of material will expire and if PG&E delays award of Work beyond the expiration date of Contractor's supplier quotations, Contractor shall acquire new material quotations from its suppliers and submit to PG&E documentation of the change in material costs from the original proposal and provide PG&E the anticipated impact of such increases to the total project budget. PG&E reserves the right to reject the increase in cost and may elect to either perform the Work itself or contract with others. PG&E expects to be reimbursed for decreases in costs of materials.
  - 8.5.1 ALTERNATIVE SUPPLIER: PG&E shall have the option to arrange with a different supplier to furnish acceptable material to Contractor at lower overall cost providing conditions of delivery, service, etc., are acceptable to Contractor.
  - 8.5.2 BASIS FOR ADJUSTMENT: Adjustments in material costs shall be computed from Contractor's actual net costs including discounts. Contractor shall furnish PG&E copies of all paid invoices along with Contractor's computations and requests for reimbursement.
  - 8.5.3 CREDITS: If there is a decrease in the cost of material listed in the Specification, Contractor shall credit PG&E in payments due Contractor to the extent of the total savings resulting from decreases.
  - 8.5.4 INVOICES: Invoices covering adjustments due to changes in material costs for material purchased in any one month pay period shall be presented within 60 days after the end of that pay period or such invoices may not be accepted for payment.
  - 8.5.5 NO FEE: Amounts payable or credited under this section shall be actual costs without fee.
- 8.6 PRICING OF INCREASE IN WORK: Change Orders that require an increase in the Work will be priced, at PG&E's option, on one of the following bases: lump-sum, unit prices, an hourly rate or a cost reimbursable compensation structure basis. The price for these bases shall include the following fees:
  - 8.6.1 WAGES AND SALARIES: Wages and salaries of Contractor's employees, including job foremen engaged directly in performing the Work. Such wages and salaries will include payroll taxes, vacation, holiday and sick leave allowances, and other fringe benefits Contractor is required to pay as a result of collective



bargaining agreements between the construction industry and the labor unions involved.

8.6.1.1 INVOICE SUPPORT: For all Work performed on an hourly rate basis, Contractor shall itemize the labor classifications, the number of individuals who worked that day in each classification, and the total number of hours worked for each classification on the LM&E Sheets. Contractor shall be compensated for labor at the labor rate quoted in the Contract for the classification worked. Excepting only the labor rates subject to Section 10.12, if Contractor elects to pay any individual(s) a rate higher than the classification rate provided in the Contract, the additional cost shall be borne by Contractor and Contractor shall not invoice PG&E a rate higher than that quoted in the Contract.

8.6.2 MATERIAL AND SUPPLIES: Materials and supplies consumed in the Work at actual cost, less trade and cash discounts, if shown on Contractor's receipt, adjusted for i) sales or use taxes; ii) transportation costs; and iii) fair market value of materials and supplies salvaged and retained by Contractor. PG&E has the option to witness and sign for the receipt of materials and supplies. Material furnished by Contractor shall be itemized on the LM&E Sheets.

8.6.3 INSURANCE: Pro rata amounts of premiums for the insurance required in Article 6 but only up to limits of the insurance specified in Section 7.2. Premiums for other insurance shall not be separately reimbursable.

8.6.4 INCIDENTALS: Incidental direct costs to Contractor arising directly from performance of the Work, provided such costs are approved in writing.

8.6.5 FEE: A fee equal to the percentage stated in Contractor's Proposal of the total of Sections 8.6.1 through 8.6.4 to cover among other things profit, supervision of personnel, field office personnel, overhead (including incidental direct costs and materials and supplies actually consumed in the Work), rental charges for use of tools and equipment valued at less than \$10,000 each and other general and indirect expenses. Unless otherwise stated, cost of general foreman shall be included in overhead.

8.6.6 EQUIPMENT Charges for Contractor's use of equipment valued at \$10,000 or more. Equipment available at the worksite will be paid for on an hourly, daily, weekly or monthly rate, whichever is the most economic to PG&E, based upon the actual hours used, including overtime, at the rates set forth in the equipment pricing schedule. Rates shall include all costs to PG&E including, but not limited to, fuel, the cost of fueling the equipment including, if applicable, fuel truck on site, insurance, licenses, taxes, and maintenance unless otherwise specified. Equipment shall, in the opinion of the PG&E, be in good working condition and suitable for the purpose for which the equipment is to be used. Equipment time, whether Contractor owned equipment or Contractor-rented equipment, will not be reimbursed by PG&E while equipment is inoperative due to breakdowns or malfunctions or for equipment that is no longer required for the performance of the Work. If PG&E requests Contractor to furnish special equipment not on hand at the worksite for use on Work and Contractor could not reasonably have been expected to know that such equipment was required, PG&E will compensate Contractor for the cost of moving the equipment on and off the worksite. If PG&E requests in writing that Contractor hold certain equipment at the worksite for Work for PG&E's convenience, compensation for standby time will be at the most economic rate quoted in Contractor's equipment rates. No other fees shall be applied to the equipment rental rates whatsoever.

8.6.6.1 If Contractor elects to rent equipment for the Work rather than use its

own equipment, the rate charged to PG&E for such Contractor-rented equipment shall not exceed the rate as quoted in this Contract for Contractor-owned equipment, subject to all of the requirements of Paragraph 8.6.6 above. In the event Contractor requests compensation for the use of Contractor-rented equipment that is higher than the most economic rate for Contractor-owned equipment, Contractor shall provide documentation to PG&E of the reason Contractor has elected to rent the equipment and justification for the higher rate.

8.6.6.2 Contractor shall specify equipment description, vehicle identification number or serial number, company equipment number, number of hours utilized, and whether equipment is owned or rented on the LM&E Sheets. Standby time shall be identified separately on the LM&E Sheets. Operator costs shall be separately reimbursed in accordance with the labor rates quoted in the Contractor's proposal. Contractor shall ensure that the rate charged for each such item of equipment is the most economic rate to PG&E for the total usage of the equipment.

8.6.7 **DAMAGED OR DESTROYED WORK:** Contingent upon the provisions of the repair and replacement of any portion of the Work destroyed or damaged due to causes beyond Contractor's control, including materials and equipment delivered to the worksite for installation that are not covered by insurance.

8.6.8 **SUBCONTRACTOR'S AND FABRICATOR'S FEES:** If Contractor requests authorization to have a Subcontractor or fabricator perform additional Work, Contractor shall state in the request the Subcontractor's or fabricator's fee applicable to Sections 8.6.1 through 8.6.4, and not to exceed an amount calculated pursuant to Section 8.6.5. Contractor shall audit and substantiate the data submitted by Subcontractor or fabricator. PG&E shall have the option of auditing Subcontractor's or fabricator's cost-plus records.

8.6.8.1 For approved additional Work or for Work performed on an hourly or time and material basis performed by a Subcontractor, Contractor will be paid the Subcontract amount (including Subcontractor's fee, if any, in conformance with Attachment 3C). This fee shall cover Contractor's profit and expenses incident to administration of the Subcontract. The fee shall not apply to rental of equipment from subsidiaries of Contractor, from its partners or co-adventurers, or from their subsidiaries.

8.6.9 **TRANSPORTATION:** Cost of transportation to the job site and from the job site to an agreed destination, including loading and unloading of equipment not self-propelled or readily movable, shall be reimbursed at the hourly rates submitted by Contractor in its Proposal, providing these costs have not been reimbursed indirectly under other items of the Contract. Contractor shall itemize transportation costs on the LM&E Sheets as described in Section 4.2.3.

8.6.10 **ITEMS EXCLUDED:** Compensation to Contractor shall not include (i) the amount of a penalty, judgment, settlement, or other expense paid or incurred by Contractor as a result of Contractor's actual or alleged violation of a contract, law, rule, or regulation, except to the extent that the penalty, judgment, settlement, or other expense represents wages or taxes otherwise reimbursable; or (ii) the amounts paid by Contractor for repair or replacement of defective Work or costs of material wasted due to careless workmanship, or costs of work performed which, in PG&E's opinion, is not necessary for the performance of the authorized Work.

8.7 **LUMP-SUM AND UNIT PRICE EXTRA WORK:** For additional Work or changes

performed on a lump-sum, or agreed-price basis, Contractor shall submit for approval by PG&E, if required, a complete price breakdown of amounts and fees based on the actual, additional costs to be incurred. The breakdown shall conform to the cost breakdown and include the fees set forth in Section 8.6 and the fees quoted in the Proposal. Extra Work performed on a unit price basis shall be computed on the basis of the Contract unit prices.

- 8.8 **COST-PLUS WORK:** For additional Work or changes authorized to be performed on a cost-plus basis, PG&E will reimburse Contractor to the extent additional costs are incurred to perform the additional Work or changes. Contractor agrees that the amount of Work performed under the terms of Section 8.6 is not specified and no claim will be accepted because the Work is greater or less than anticipated. Contractor must complete an LM&E Sheet for all additional Work performed.
- 8.9 **COST SEGREGATION:** Charges made under Section 8.6, 8.7 and 8.8 shall be segregated to PG&E cost accounts in accordance with procedures and details as required.
- 8.10 **DECREASE IN WORK:** Change Orders that require a reduction in the Work shall entitle PG&E to a credit, at PG&E's option, of either an amount equal to Contractor's reduced costs as agreed upon between PG&E and Contractor or an amount computed on the basis of Contract unit prices for the Work. If required by PG&E, Contractor shall submit a complete price breakdown of amounts and fees.

#### **ARTICLE 9. DELAYS IN WORK**

- 9.1 **DELAYS:** Nothing contained in this Article 9 shall serve to relieve Contractor of its obligations and responsibilities for timely completion of all of the Work hereunder. Contractor shall promptly notify PG&E in writing of any impending cause for delay. If possible, PG&E will assist Contractor in reducing the delay. Failure to promptly notify PG&E will constitute waiver by Contractor of concessions or benefits specified under this section.
- 9.2 **DELIVERY OF MATERIALS:** Delivery dates for material to be supplied by others, directly or through PG&E, are specified under the Construction Schedule and are scheduled to allow Contractor sufficient time for installation.
- 9.3 **SUSPENSION OF WORK:** PG&E reserves the right to suspend the Work or delivery of materials.
- 9.4 **DELAYS WITHIN CONTRACTOR'S CONTROL:** No additional compensation or other concessions will be allowed Contractor for expenses resulting from delays for which Contractor is responsible. If, in PG&E's opinion, the delay is sufficient to prevent Contractor's compliance with the specified Construction Schedule, Contractor shall accelerate the Work by overtime or other means, at Contractor's expense, to assure completion on schedule.
- 9.5 **DELAYS CAUSED BY ADVERSE WEATHER:** Delays or Work stoppages due to adverse weather conditions considered normal for the area and time of year will not be considered as delays beyond Contractor's control and no additional compensation or extension of schedule will be allowed. Delays due to weather will be considered beyond the contractor's control if Contractor can show that adverse weather was of greater duration or intensity than normally expected for the job area and time of year.
- 9.6 **DELAYS BEYOND CONTRACTOR'S CONTROL:** If there is a delay in delivery of material to be furnished by PG&E or a delay, in PG&E's opinion, caused by circumstances beyond Contractor's control, PG&E will investigate the causes and remedies and may require or authorize one of the following procedures. Contractor will be promptly notified as to which procedure will be followed.
  - 9.6.1 **MINOR DELAY:** Contractor may be required to complete the Work in accordance with the

- 10.14.2 TRADES: Various branches or trades into which the Work is divided are generally specified under separate divisions of the Specification. Contractor shall, in accepting the bid of a Subcontractor for a given trade, be satisfied that the Work to be performed by that trade is included in the Subcontractor's bid, whether or not it is specifically required within the division relating to that trade or class of Work. Journeymen and other workers employed in the Work shall be skilled in their trades. Workers employed by Contractor shall be subject to PG&E approval.
- 10.15 REPORTING: In accordance with Section 7912 of the California Public Utilities Code, Contractor agrees to report annually to PG&E the number of California residents employed by Contractor, calculated on a full-time or full-time equivalent basis, who are personally providing services to PG&E.

**PART B:**  
**BASE GENERAL CONDITIONS**

**ARTICLE B-1.**  
**NO GUARANTEE OF WORK; INDEPENDENT CONTRACTOR**

B1.1 THIS IS NOT AN EXCLUSIVE CONTRACT. THIS CONTRACT DOES NOT GUARANTEE CONTRACTOR ANY VOLUME OR DURATION OF WORK. PG&E EXPRESSLY RESERVES ALL ITS RIGHTS, INCLUDING BUT NOT LIMITED TO THE RIGHT TO CONTRACT WITH OTHER PARTIES FOR THE PERFORMANCE OF WORK OF THE TYPE CONTEMPLATED BY THIS CONTRACT; THE RIGHT TO REQUEST PROPOSALS FROM OTHERS WITH OR WITHOUT REQUESTING PROPOSALS FROM CONTRACTOR AND THE UNRESTRICTED RIGHT TO PERFORM THE WORK WITH PG&E'S OWN EMPLOYEES.

B-1.2 INDEPENDENT CONTRACTOR: In assuming and performing the obligations of this Contract, Contractor is an independent contractor and shall not be eligible for any benefits which PG&E may provide its employees. All persons, if any, hired by Contractor shall be employees or Subcontractors of Contractor and shall not be construed as employees or agents of PG&E in any respect.

**ARTICLE B-2.**  
**INDEMNIFICATION, LIABILITY AND WITHHOLDING**

B-2.1 INDEMNIFICATION: Contractor shall indemnify, hold harmless and defend PG&E, its affiliates, subsidiaries, parent company, officers, managers, directors, agents, and employees, from and against all claims, demands, losses, damages, costs, expenses, and liability (legal, contractual, or otherwise), which arise from or are in any way connected with any: (i) injury to or death of persons, including but not limited to employees of PG&E or Contractor; (ii) injury to property or other interests of PG&E, Contractor, or any third party; (iii) violation of a local, state, or federal common law, statute or regulation, including but not limited to environmental laws or regulations; (iv) strict liability imposed by any law or regulation; (v) delay or failure to pay any Subcontractor, including but not limited to any demands for payment, invoices, or liens; (vi) delay or failure to pay any employees, laborers, or other personnel of Contractor or any Subcontractor the compensation, monies, wages, benefits or other payment due or allegedly due; so long as such injury, violation, payment or strict liability (as set forth in (i) - (vi) above) arises from or is in any way connected with Contractor's performance of, or failure to perform, this Contract, (a) excepting only such loss, damage, cost, expense, liability, payment, strict liability, or violation of law or regulation for which indemnity is not allowed under applicable law, and (b) except to the extent that the alleged claim relates to provision of professional services on the part of the Contractor or its Subcontractors, in which case the Contractor's obligation to indemnify PG&E shall be to the extent of Contractor's negligence and shall be reduced by any active negligence on the part of PG&E. As used in the preceding sentence, "professional" is defined as services that are primarily intellectual rather than manual, including preparation of engineering, designs, reports, drawings and applications. Contractor shall, on PG&E's request, defend any action, claim, or suit asserting a claim which might be covered by this

indemnity. Contractor shall pay all costs and expenses that may be incurred by PG&E in enforcing this indemnity, including reasonable attorney's fees.

- B-2.1.1 HAZARDOUS MATERIAL OR WASTE: Contractor acknowledges that any claims, demands, losses, damages, costs, expenses, and liability that arise from or are in any way connected with the release or spill of any legally designated hazardous material or waste and arise from or are in any way connected with the Work performed under this Contract, are expressly within the scope of this indemnity. However, notwithstanding the foregoing, Contractor and PG&E recognize and agree that Contractor bears no responsibility whatsoever for the creation, existence or presence of any toxic, hazardous, radioactive, infectious or other dangerous substances existing at PG&E's work site at the time that Contractor commences performance of services at said site ("Pre-existing Conditions"). Under no circumstances will Contractor assume ownership of or legal liability for PG&E's waste under CERCLA or other laws pertaining to hazardous materials and wastes or assume the status of generator, storage agent, treatment facility, or disposal facility for PG&E's waste under RCRA or any state law governing the treatment, storage or disposal of waste. Contractor will, at PG&E's request, help PG&E identify appropriate alternatives for offsite treatment, storage or disposal of hazardous materials, but, Contractor shall not make any independent determination about the selection of a treatment, storage, or disposal facility. PG&E shall sign all manifests or shall provide written authorization for Contractor to sign manifests as agent for PG&E. Any hazardous materials, substances, pollutants or contaminants generated or encountered in the performance of the Work, except for hazardous materials that are brought onto the worksite by the Contractor, shall be the responsibility of PG&E and shall be disposed of under a RCRA hazardous waste Generator Number obtained by and carried in the name of PG&E.
- B-2.2 WITHHOLDING: PG&E may withhold from the final payment due Contractor hereunder such amounts as, in PG&E's opinion, are sufficient to provide security against all loss, damage, expense, and liability covered by the foregoing indemnity provision for damage to property.
- B-2.3 RISK OF LOSS OR DAMAGE TO WORK: Until the Work is completed and accepted by PG&E, the risk of loss or damage to the Work shall remain with Contractor. No damages or extras will be allowed for unforeseen difficulties or obstructions, except as explicitly set forth herein.
- B-2.4 INCIDENTAL AND CONSEQUENTIAL DAMAGES: EXCEPT WITH RESPECT THE CONFIDENTIALITY OBLIGATIONS AND THIRD-PARTY INDEMNIFICATION OBLIGATIONS OF CONTRACTOR FOR DEATH AND PERSONAL INJURY CLAIMS UNDER THIS CONTRACT, NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY (OR ANY INDIVIDUAL OR ENTITY CLAIMING THROUGH SUCH PARTY) FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR UNRECOVERED OVERHEAD AND, UNLESS EXPRESSLY AUTHORIZED IN WRITING BY PG&E, COMMITMENTS TO SUBCONTRACTORS, RENTAL OR LEASE AGREEMENTS, AND PERSONAL SERVICES CONTRACTS.
- B-2.5 DIRECT DAMAGES: EXCEPT AS TO THE CONTRACTOR'S INDEMNIFICATION OBLIGATIONS FOR THIRD PARTY DEATH AND PERSONAL INJURY CLAIMS UNDER THIS CONTRACT, CLAIMS FOR DEATH OR PERSONAL INJURY, AND CLAIMS FOR INFRINGEMENT, A PARTY'S TOTAL AGGREGATE LIABILITY TO THE OTHER PARTY (OR ANY INDIVIDUAL OR ENTITY CLAIMING THROUGH SUCH PARTY) WHETHER IN EQUITY, COMMON LAW, CONTRACT, ESTOPPEL, NEGLIGENCE, TORT, STRICT LIABILITY OR ANY OTHER THEORY (REGARDLESS OF THE FORM OF ACTION), ARISING OUT OF, RESULTING FROM OR RELATING TO THE CONTRACT, SHALL NOT EXCEED TWENTY THREE MILLION DOLLARS.).
- B-2.6 THE PARTIES AGREE THAT THE LIMITS OF LIABILITY STATED IN THIS SECTION B-2 ARE CUMULATIVE AND THE AMOUNTS OF ANY SUCH LIMITS OF LIABILITY MAY NOT BE COMBINED WITH ANY OTHER LIMITS OF LIABILITY SET FORTH IN SECTION B-2 SO AS TO INCREASE THE FOREGOING LIABILITY CAP IN ANY PARTICULAR INSTANCE OR SERIES



OF INSTANCES.

**ARTICLE B-3.  
AMENDMENTS, SUBCONTRACTS AND ASSIGNMENTS**

- B-3.1 **AMENDMENT:** No provision of the Contract will be deemed amended or waived by PG&E without prior written approval by Change Order. No oral statement will modify or otherwise affect the terms and conditions set forth herein.
- B-3.2 **SUBCONTRACTS:** Contractor shall not enter into Subcontracts and no Subcontractor shall be permitted to perform Work without the prior written approval of PG&E. PG&E's approval of any Subcontract shall not relieve Contractor of its obligations to PG&E under this Contract. The provisions and obligations of this Contract shall apply to any Subcontract and Contractor shall be responsible to PG&E for any damages to PG&E arising out of Subcontracts not in accordance with this Contract. Nothing in the Contract shall create any contractual relations between a Subcontractor and PG&E.
- B-3.3 **ASSIGNMENT:** Neither party may assign all or any part of this Contract or its rights and obligations hereunder, directly or indirectly, by operation of law or otherwise without the other party's prior written consent, except that Contractor may assign to Contractor's corporate affiliate in which Contractor holds a majority interest, provided that the Contractor and the affiliate remain obligated under this Contract. Subject to the foregoing, this Contract shall be binding upon and inure to the benefit of the successors and assigns of the Parties hereto.

**ARTICLE B-4.  
ROYALTIES, LICENSE FEES, USE RIGHTS,  
INFRINGEMENT PROTECTION**

- B-4.1 **ROYALTIES AND LICENSE FEES:** Royalties, license fees or other charges for patents, copyrights, licenses, or other intellectual property for designs, processes, machinery, equipment, technology, published or unpublished data, information or materials, including but not limited to, manuals, computer programs or other deliverables furnished by Contractor for the Work, or for processes or methods employed by Contractor in performing the Work, shall be included in the Contract price.
- B-4.2 **OWNERSHIP OF DELIVERABLES:** PG&E shall own all data, drawings, designs, reports, information, manuals, computer programs or other written, recorded, photographic or visual materials, or other deliverables produced in the performance of this Contract. Contractor shall retain no ownership, interest, or title in them except as may otherwise be provided in this Contract. Re-use of any such deliverables by PG&E on any extension of the project or on any other project without the written authorization of Contractor shall be at PG&E's sole risk.
- B-4.3 **PREEXISTING RIGHTS:** If and to the extent that Contractor retains any preexisting rights in any materials furnished hereunder, Contractor hereby grants to PG&E the irrevocable, perpetual, non-exclusive, worldwide, royalty-free right and license to (1) make, use, execute, reproduce, display, perform, distribute copies of, and prepare derivative works based upon such preexisting rights and derivative works thereof in connection with PG&E's business, and (2) authorize others to do any or all of the foregoing in connection with PG&E's business. Any claims of Contractor proprietary rights in materials furnished hereunder must be expressly set forth in this Contract or shall have been previously disclosed to PG&E in writing.
- B-4.4 **CONFIDENTIALITY:** In the course of performing the Work under this Contract, Contractor may have access to confidential, commercial, business or personal information concerning, but not limited to, technological, financial, rate-making, legislative and personnel matters and practices of PG&E, its affiliates, subsidiaries, parent company or members of the public. Contractor



agrees not to disclose any such confidential information or to otherwise make it available to any other person, including any affiliate of PG&E that provides energy or energy-related products or services, without the prior written approval of PG&E, except to Contractor's employees who need such information to properly perform their duties under this Contract, except to Contractor's employees who need such information to properly perform their duties under this Contract. Prior to execution of this Contract, Contractor shall complete, sign and return Exhibit 7 Nondisclosure Agreement.

- B-4.5 **USE AND REPRODUCTION RIGHTS:** PG&E shall have the unrestricted right of use and reproduction of all documentation, including but not limited to, instructional manuals, and other materials related to the Work furnished hereunder. Such use and reproduction by PG&E or by contractors doing work for PG&E shall not require further permission by Contractor, nor shall it constitute infringement of Contractor's ownership rights, including copyright, to such materials. Any claims of Contractor to ownership in materials furnished hereunder must be expressly set forth in the Contract or shall be disclosed to PG&E in writing.
- B-4.6 **INFRINGEMENT PROTECTION:** Contractor represents to PG&E that the Work to be performed, and the materials prepared or used, under this Contract will not infringe upon the copyright, patent or license, or otherwise violate the proprietary rights, including trade secret rights, of any person or entity. Contractor agrees to indemnify and hold PG&E, its affiliates, subsidiaries, parent company, officers, managers, directors, agents, and employees, harmless from any suit, demand or claim alleging any such infringement or violation. In addition to the foregoing, if there is such a claim, Contractor agrees at PG&E's option to either procure for PG&E the right to continue using the material, replace the material with non-infringing material or modify it so it becomes non-infringing, or remove the item and refund the applicable portion of the Contract price; provided, however, that the replaced or modified material shall be equal to that contracted for hereunder and satisfactory to PG&E. Contractor further agrees to pay any judgment or reasonable settlement offer resulting from a suit, demand or claim, and pay any reasonable attorney's fees incurred by PG&E in defense against such suit.
- B-4.7 **PUBLIC RELEASE OF RESULTS:** Contractor agrees not to release any information relating to the Work performed hereunder for publication, advertising, or for any other purpose, without first providing PG&E with the information sought to be released and a description of the publication for PG&E's prior approval. Contractor further agrees that a release shall not present any material findings not reasonably inferable from the data. Any public release shall acknowledge PG&E's sponsorship of the Work.
- B-4.8 **PUBLIC TESTIMONY:** It is further agreed between the Parties that, if requested by PG&E, Contractor shall provide testimony before any federal, state or local court, regulatory body or any other public agency to substantiate any Work performed or data, reports, or materials supplied to PG&E. Reasonable fees for such testimony will be negotiated at that time.
- B-4.9 **THIRD PARTY LICENSES:** Contractor represents and warrants that it shall comply (and ensure that its personnel and subcontractors comply) with all third party licenses, terms of use, policies and procedures that apply to or otherwise govern access to and/or use of any third party materials made available by PG&E to Contractor under this Contract.

#### **ARTICLE B-5. CONFLICT OF INTEREST/BUSINESS ETHICS**

- B-5.1 **REASONABLE CARE:** Contractor shall exercise reasonable care and diligence to prevent any actions or conditions which could result in a conflict with PG&E's interest.
- B-5.2 **OTHER EMPLOYMENT:** During the term of this Contract, Contractor or its employees will not accept any employment or engage in any work which creates a conflict of interest with PG&E or in any way compromises the Work to be performed under this Contract.

- B-5.3 GIFTS: Contractor or its employees shall not offer or cause to be offered gifts, entertainment, payments, loans and/or other services, benefits or considerations of more than a nominal value to PG&E's employees, their families, vendors, Subcontractors and other third parties.
- B-5.4 ACCURATE DOCUMENTATION: All financial statements, reports, billings, and other documents rendered shall properly reflect the facts about all activities and transactions handled for the account of PG&E.
- B-5.5 NOTIFICATION: The Contractor shall immediately notify PG&E of any and all violations of this clause upon becoming aware of such violation.

**ARTICLE B-6.**  
**SAFETY PRECAUTIONS AND PROTECTION OF PROPERTY**

- B-6.1 REGULATIONS AND CONDUCT OF WORK: Contractor shall plan and conduct the Work to safeguard persons and property from injury. Contractor shall direct the performance of the Work in compliance with reasonable safety and work practices and with all applicable federal, state, and local laws, rules, and regulations, including but not limited to "Occupational Safety and Health Standards" promulgated by the U.S. Secretary of Labor and the California Division of Occupational Safety and Health, including the wearing of the appropriate Personal Protective Equipment (PPE) at the worksite. Work in areas adjacent to electrically energized facilities and/or operating natural gas facilities shall be performed in accordance with said practices, laws, rules, and regulations. PG&E may designate safety precautions in addition to those in use or proposed by Contractor. PG&E reserves the right to inspect the Work and to halt construction to ensure compliance with reasonable and safe work practices and with all applicable federal, state, and local laws, rules, and regulations. Neither the requirement that Contractor follow said practices and applicable laws, rules, and regulations, nor adherence thereto by Contractor, shall relieve Contractor of the sole responsibility to maintain safe and efficient working conditions.
- B-6.2 CALIFORNIA HEALTH AND SAFETY CODE: The California Health and Safety Code requires businesses to provide warnings prior to exposing individuals to materials listed by the Governor as chemicals "known to the State of California to cause cancer, birth defects or reproductive harm." PG&E uses chemicals on the Governor's list at many of its facilities. In addition, many of these chemicals are present at non-PG&E-owned facilities and locations. Accordingly, in performing the Work or services contemplated under this Contract, Contractor, its employees, agents and Subcontractors may be exposed to chemicals on the Governor's list. Contractor is responsible for notifying its employees, agents, and Subcontractors that Work performed hereunder may result in exposures to chemicals on the Governor's list.
- B-6.3 CONTROLLED SITE ACCESS: A distinctive visible identification badge shall be furnished by Contractor and worn by its employees when on PG&E's property. Insofar as practicable, PG&E will require Contractor's employees to use one designated access in going to and from the worksite. Contractor's guests and visitors shall secure a permit from PG&E to enter the worksite, and will be logged in and out of the property with PG&E retaining the permit at the time of logging out. Contractor's employees shall not enter electrically energized equipment areas or other areas out of construction limits except with written permission.
- B-6.4 ADDITIONAL PRECAUTIONS: If PG&E requests Contractor to provide certain safeguards not in use but considered necessary and if Contractor fails to comply with the request within a reasonable time, PG&E may provide the safeguards at Contractor's expense. Failure to comply with safety precautions required by PG&E may result in cancellation of the Contract in accordance with Article B-10.
- B-6.5 PROTECTION OF FLOORS AND WALLS: Contractor shall protect floors and walls from damage and discolorations due to exposure to oils and other discoloring agents during

performance of the Work. Damage or discoloration shall be repaired to PG&E's satisfaction at Contractor's expense.

- B-6.6 **STORAGE OF HAZARDOUS MATERIALS AND DISPOSAL OF HAZARDOUS WASTES:** Surplus Hazardous Materials and Hazardous Wastes are the property and responsibility of Contractor, and may not be stored or disposed of on or at the Work site. Contractor represents and warrants that any facility to which Hazardous Wastes may be moved is in compliance with any and all federal, state, and local laws, rules and regulations pertaining thereto and that the facility is suitable to receive and/or dispose of, and may lawfully receive and/or dispose of the Hazardous Wastes.
- B-6.7 **DISCOVERY OF HAZARDOUS WASTES OR HAZARDOUS MATERIAL AND NOTICE TO PG&E:** In the event that Contractor discovers Hazardous Waste or Hazardous Material on the job site during the performance of the Work, Contractor shall immediately (1) secure the area around the Hazardous Waste or Hazardous Material, and (2) notify PG&E of the situation.
- B-6.8 **FIRST-AID FACILITIES:** If first-aid facilities are required, Contractor shall furnish, stock, and provide the necessary qualified personnel to maintain such first-aid facility at Contractor's expense unless other provisions are made and agreed upon with PG&E. Nothing contained in the Contract shall relieve Contractor from providing and maintaining all stretchers, blankets, first-aid material, and first-aid kits as required by applicable safety order of the State of California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) or as required by other federal, state or local laws, rules or regulations.
- B-6.9 **STANDBY VEHICLES(S):** If one or more standby vehicles is required for the transporting of seriously injured personnel, Contractor shall furnish, maintain and operate such vehicle(s) at Contractor's expense unless other provisions are made and agreed upon with PG&E. If a standby vehicle is provided for transporting seriously injured project personnel to medical facilities, Contractor shall have available specifically assigned workers who are qualified to drive the vehicle and to care for the injured in case of emergency.

#### **ARTICLE B-7. GUARANTEES AND EQUIPMENT WARRANTY**

- B-7.1 **EQUIPMENT AND MATERIAL GUARANTEES:** In addition to the guarantees provided under this Contract, or implied in fact or in law, Contractor shall leave the entire project in satisfactory working order and repair or replace at its expense any part of the Work that develops defects due to faulty workmanship, materials, or any failure to comply with or perform in accordance with the requirements of the Specification within a period of twenty-four (24) months after the Work is accepted by PG&E. Contractor shall promptly repair or replace, at Contractor's expense, other Work, equipment or property damaged as the result of the defects, or as a result of the repairing thereof, and hold PG&E harmless from PG&E's repair expenses. The warranty period for a repair or replacement shall be one year from the date of acceptance by PG&E of the repair or replacement.
- B-7.2 **DESIGN AND ENGINEERING GUARANTEES:** In addition to the guarantees provided above, Contractor shall repair or replace at its expense any part of the Work that develops defects due to faulty design or engineering, or any failure to comply with or perform in accordance with the requirements of the Specification within a period of five years after the Work is accepted by PG&E and Contractor shall promptly remedy, at Contractor's expense, other Work, equipment or property damaged as the result of the defects, or as a result of the remedying thereof and hold PG&E harmless from PG&E's repair expenses throughout the duration of the design and engineering warranty period.
- B-7.3 **EQUIPMENT WARRANTY:** If any third party materials or components are embodied in the Equipment or furnished with or in connection with the Work and are covered by a third party warranty or indemnity, Contractor shall: (a) provide PG&E with a copy of each such warranty or

indemnity; (b) if such warranty or indemnity does not, by its express terms, pass through to the end customer, then to the extent permitted by the third party, Contractor hereby assigns and transfers to PG&E all warranties and/or indemnities provided by such third party or Contractor shall require the third party (at Contractor's sole cost and expense) to grant PG&E the benefit under such warranties and/or indemnities; and (c) unless specifically provided otherwise herein, PG&E shall have no obligation to pay any third party any fees, royalties or other payments for PG&E's use of any third party materials embodied in or furnished with the Equipment. Contractor shall support and maintain such third party materials during the applicable warranty period.

- B-7.4 **WORK STANDARDS:** Contractor warrants to PG&E that the Work under this Contract shall be performed with the degree of skill and care that is required by current, good and sound professional procedures and practices, and in conformance with generally accepted professional standards prevailing at the time the Work is performed.
- B-7.5 **REPAIRS BY PG&E:** In the event PG&E determines that it is impractical for Contractor to make repairs or replacements, PG&E reserves the right to undertake or have others undertake the repairs or replacements at Contractor's expense. PG&E's exercise of its rights under this Section shall not waive any rights or remedies PG&E may have under this Contract in law or equity.

#### **ARTICLE B-8. PG&E'S OPERATION**

- B-8.1 **PG&E'S OPERATION:** When working in the vicinity of PG&E's plant or offices, Contractor shall conduct the Work in a manner that will cause a minimum of inconvenience to PG&E's employees and the general public. Contractor shall not interfere with PG&E's business or other operations.
- B-8.2 **USE OF FACILITIES:** PG&E shall have the use of constructed facilities during the Contract period whether facilities are completed or not. If PG&E makes use of an uncompleted facility, PG&E will reimburse Contractor for actual expense Contractor may incur as a result of such use.
- B-8.3 **ADVERTISING MATTER:** Contractor shall neither advertise nor allow advertising at the worksite without written approval.
- B-8.4 **CLEANING UP:** With respect to its own operation, Contractor shall maintain the worksite and related structures, equipment, and facilities in a clean, orderly condition during progress of the Work and clean up debris to the satisfaction of PG&E. If, in PG&E's opinion, the worksite is not being kept in a clean, orderly condition and if upon notice to correct the condition Contractor fails to so do, PG&E may shut down the Work until cleanup is performed or order others to perform cleanup work at Contractor's expense. Building surfaces, including glass, shall be left clean. Where more than one contractor is working at the worksite, and there is a disagreement in regard to the amount of cleanup each shall perform, PG&E will designate the amount of cleanup work each contractor shall perform. Upon completion of the Work, Contractor shall remove its tools, construction equipment, debris, and waste material from the worksite and leave the area in a clean and orderly condition to PG&E's satisfaction.

#### **ARTICLE B-9. AVAILABILITY OF INFORMATION**

- B-9.1 **ACCESS:** PG&E's duly authorized representatives shall have, during the term of the Contract and for three years thereafter, access at all reasonable times to all of the Contractor's and its Subcontractors' personnel, accounts and records of all description, including but not limited to computer files, pertaining to the Contract to verify or review the quantity, quality, work program and progress of the Work, reimbursable costs, amounts claimed by the Contractor, estimates of cost for fixed rates including those applicable to proposed changes, and for any other reasonable purposes including any and all records of the Contractor for the purpose of verifying

compliance with Article B-5, CONFLICT OF INTEREST/BUSINESS ETHICS.

- B-9.2 **APPLICABILITY:** This Article B-9 shall apply to all PG&E contracts but shall not apply to pricing for contracts performed solely on a lump-sum basis. However, where lump-sum and time and materials work (including unit price, reimbursable cost, fixed rates, etc.) are performed together, either as a part of this Contract or as separate contracts, then the above audit right shall also extend to PG&E's access to all Contractor's records pertaining to all PG&E contracts, including the lump-sum, for assurance that the portions of the Work performed on a time and materials basis are not being charged with time, material or other units or cost which are intended to be covered by lump-sum or fixed rates, etc., provided under this Contract, including Change Orders, or other agreements.
- B-9.3 **ACCOUNTING:** The Contractor's and its Subcontractors' accounts shall be kept in accordance with generally accepted accounting principles in the particular industry and shall be kept in such a manner and in sufficient detail to clearly disclose the nature and amounts of the different items of service and cost pertaining to the Contract and the basis for charges or allocations to the Contract.
- B-9.4 **SUBCONTRACTORS:** The Contractor shall include the necessary provisions in its Subcontracts to ensure that its Subcontractors comply with this Article.

#### **ARTICLE B-10. CANCELLATION AND TERMINATION OF CONTRACT**

- B-10.1 **CANCELLATION FOR CAUSE:** PG&E may, at its option, cancel or suspend this Contract for cause upon, but not limited to, the: (i) failure, refusal or inability of the Contractor to perform the Work in accordance with this Contract for any reason (except for those reasons that are beyond Contractor's control) after receiving notice from PG&E and an opportunity to cure and Contractor has failed to do so; provided however, at PG&E's option, safety or security violations may result in immediate cancellation; (ii) Contractor's insolvency, failure to pay bills, or receipt of returned checks for payment of its bills due to insufficient funds; (iii) placement of a legal action against Contractor which, in PG&E's opinion, may interfere with the performance of the Work; or (iv) the determination by PG&E that the Work will not be completed in the specified time, request by PG&E that Contractor take steps necessary to accomplish the required progress and completion, and failure of Contractor to do so.
- 10.1.1 PG&E will be the sole judge whether Contractor is substantially performing Work in accordance with this Specification. Contractor shall be liable for additional costs to PG&E arising from cancellation.
- 10.1.2 If the Contract is canceled, Contractor shall vacate the worksite but shall not remove material, plant, or equipment without the approval of PG&E. In the event of such cancellation, PG&E shall pay Contractor for services satisfactorily performed prior to the date of cancellation which are of benefit to PG&E. In no event shall PG&E be liable for lost or anticipated profits or overhead on uncompleted portions of the Work. Any reports, drawings or other documents prepared for PG&E prior to the effective date of such cancellation shall be delivered to PG&E by Contractor. Contractor shall not enter into any agreements, commitments or Subcontracts which would incur significant cancellation costs without prior written approval of PG&E. Such written approval is a condition precedent to the payment of any cancellation charges by PG&E.
- 10.1.3 In addition to other remedies, PG&E may at its option and without prejudice to its other rights, take over and complete all or part of the Work using Contractor's equipment and facilities at the worksite.
- B-10.2 **TERMINATION FOR PG&E'S REASONS:** PG&E may suspend or terminate the Contract, without cause upon written notice to Contractor. Contractor thereupon shall take whatever action with respect to performance of the Work as will tend to minimize its claim against PG&E.



In the event of termination, PG&E shall be liable to Contractor only for the compensation earned on the Work satisfactorily performed to the date of termination, plus direct costs reasonably incurred by Contractor in terminating its operation. Contractor shall not be entitled to any payment for lost or anticipated profits or overhead on uncompleted portions of the Work. Contractor shall not enter into any agreements, commitments or Subcontracts which would incur significant cancellation costs without prior written approval of PG&E. Such written approval is a condition precedent to the payment of any cancellation charges by PG&E.

#### **ARTICLE B-11. GENERAL PROVISIONS**

- B-11.1 **LEGAL REPRESENTATION:** To the extent necessary, each Party was represented by counsel in the negotiation and execution of this Contract.
- B-11.2 **CHOICE OF LAWS:** This Contract shall be construed and interpreted in accordance with the laws of the State of California, excluding any choice of law rules which may direct the application of the laws of another jurisdiction. Any controversy or claim arising out of or in any way relating to this Contract which cannot be amicably settled without court action shall be litigated in a California State Court of competent jurisdiction; or if jurisdiction over the action cannot be obtained in a California State Court, in a Federal Court of competent jurisdiction situated in the State of California.
- B-11.3 **COMPLIANCE WITH LAWS:** Contractor shall comply with all federal, state and local laws, rules and regulations applicable to the Work to be performed under this Contract and to all aspects of the employment relationships between Contractor and its employees assigned to this Contract. Unless prohibited by law, Contractor shall hold PG&E harmless from any liability, fine or penalty incurred as a result of Contractor's failure to comply with applicable legal and regulatory requirements.
- 11.3.1 **ENVIRONMENTAL LAWS:** Contractor shall comply with all environmental and endangered species requirements and shall conduct its operations in a manner that complies with applicable programs and permits. In some cases, PG&E-specific environmental permits or programs may apply to the Work. Contractor is responsible for informing itself about and complying with such permits or programs.
- 11.2.1 **WORKERS:** Contractor will only assign workers who have a current legal right to work in the country where they will be assigned. Contractor assumes all responsibility for immigration law compliance with respect to the workers it assigns pursuant to this Contract.
- B-11.4 **PG&E'S SOX EFFORTS:** Contractor agrees to work with PG&E in good faith to enable PG&E to comply with SOX, including in particular but without limitation PG&E's management assessment and PG&E's auditor's opinion on the adequacy of internal controls over financial reporting pursuant to Section 404 of SOX. To that end, and in addition to Contractor's other obligations set forth in this Contract, Contractor agrees to the following:
- B-11.4.1 Contractor will maintain complete and accurate records and documentation of transactions, processes and controls performed for PG&E or otherwise relating to the Work, especially as it relates to financial information and any required disclosures thereof, which records and documentation will be subject to audit by PG&E or its representatives as provided in this Contract; and
- B-11.4.2 Contractor will notify PG&E immediately of any organization, security-related or other issues that Contractor knows or suspects may reasonably affect the ability of PG&E to comply with SOX.
- B-11.4.3 **BACK-UP CERTIFICATES:** Contractor will deliver reasonable back-up certificates relating to its Work under the Contract in a form to be mutually agreed to the extent



reasonably necessary to support PG&E in its filing of its applicable SOX and other certifications with the Securities and Exchange Commission.

- B-11.5 **DISPUTE RESOLUTION:** The Parties shall attempt in good faith to resolve any dispute arising out of or relating to this Contract promptly by negotiations between a vice president of PG&E or his or her designated representative and an executive of similar authority of Contractor. Either Party may give the other Party written notice of any dispute. Within 20 days after delivery of said notice, the executives shall meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary to exchange information and to attempt to resolve the dispute. If the matter has not been resolved within 30 days of the first meeting, either Party may initiate a mediation of the controversy. Each Party is required to continue to perform its obligations under this Contract pending final resolution of any dispute arising out of or relating to this Contract.
- B-11.6 **CONFIDENTIALITY:** All negotiations and any mediation conducted pursuant to this section are confidential and shall be treated as compromise and settlement negotiations, to which Section 1119 of the California Evidence Code shall apply, and Section 1119 is incorporated herein by reference.
- B-11.7 **PRELIMINARY INJUNCTION:** Notwithstanding the foregoing provisions, a Party may seek a preliminary injunction or other provisional judicial remedy if in its judgment such action is necessary to avoid irreparable damage or to preserve the status quo.
- B-11.8 **NON-WAIVER:** The waiver by either Party of any breach of any term, covenant or condition contained in this Contract, or any default in the performance of any obligations under this Contract, shall not be deemed to be a waiver of any other breach or default of the same or any other term, covenant, condition or obligation. Nor shall any waiver of any incident of breach or default constitute a continuing waiver of the same.
- B-11.9 **ENFORCEABILITY:** In the event that any of the provisions, or application of any of the provisions, of this Contract are held to be illegal or invalid by a court of competent jurisdiction or arbitrator/mediator, PG&E and Contractor shall negotiate an equitable adjustment in the provisions of this Contract with a view toward effectuating the purpose of this Contract. The illegality or invalidity of any of the provisions, or application of any of the provisions, of this Contract will not affect the legality or enforceability of the remaining provisions or application of any of the provisions of the Contract.
- B-11.10 **INTEGRATION:** This Contract constitutes the entire agreement between the Parties and supersedes all prior or contemporaneous communications, representations, or agreements, whether oral or written, with respect to the subject matter hereof and has been induced by no representations, statements or agreements other than those herein expressed. No provision of this Contract may be modified or waived unless in writing and executed by both Parties.
- B-11.11 **THIRD PARTY BENEFICIARIES:** To the extent the scope of Work under the Contract requires Contractor to perform Work for both PG&E and Joint Trench Parties, Contractor and PG&E hereby agree that the Joint Trench Parties are express third party beneficiaries to the Contract.
- B-11.12 **PRIOR WORK:** Work performed prior to award of Contract pursuant to PG&E's authorization shall be performed in accordance with, and shall be subject to, the provisions of this Contract.
- B-11.13 **SURVIVAL:** The provisions entitled Article B-2 "Indemnification, Liability and Withholding," Section B-3.3 "Assignment," Section B-4.3 "Infringement Protection," Article B-7 "Guarantees and Equipment Warranty" as well as Article B-9 "Availability of Information", shall survive termination, cancellation or expiration of this Contract.
- B-11.14 **USE OF CERTAIN WORDS:** Unless the context requires otherwise, (i) "including" (and any of its derivative forms) means "including but not limited to", (ii) "may" means has the right, but not

the obligation to do something, and "may not" means does not have the right to do something, (iii) "will" and "shall" are expressions of command, not merely expressions of future intent or expectation, (iv) "written" or "in writing" is used for emphasis in certain circumstances, but does not restrict the general application of the notice requirements in Section B-11.14 NOTICES in those and other circumstances, (v) use of the singular imports the plural and vice versa, and (vi) use of a specific gender includes the other gender(s).

B-11.15 NOTICES: All formal notices, requests, demands, approvals and communications under the Contract (other than routine operational communications) (collectively, "*Notices*") will be in writing and may be served either (i) in person or (ii) by registered or certified mail or express shipping services or air freight services that provide proof of delivery, with postage or shipping fees prepaid or (iii) facsimile, and addressed to the Party to be served at the address identified on the signature page of the Contract.

## **ARTICLE B-12 PG&E'S REQUIREMENTS AND POLICIES**

B-12.1 PG&E'S SUPPLIER DIVERSITY POLICY: It is PG&E's policy that Women, Minority, and Disabled Veteran Business Enterprises (WMDVBEs) shall have the maximum practicable opportunity to participate in providing the products and services PG&E purchases.

- 12.1.1 For all PG&E contracts, the Contractor agrees to comply, and to require all Subcontractors and sub-subcontractors to comply, with PG&E's Supplier Diversity Purchasing Policy, as set forth in Exhibit 1 hereto. The Contractor shall provide to each prospective Subcontractor a copy of Exhibit 1.
- 12.1.2 In addition, for contracts exceeding \$500,000 (or \$1 million for construction contracts), the Contractor must comply with the Policy Regarding Utilization of Small Business Concerns and Small Disadvantaged Business Concerns, as described in Exhibit 2 hereto. The Subcontracting Plan for these contracts must include provisions for implementing the terms prescribed in Exhibit 2. However, Small Business and Small Disadvantaged Business Subcontracting Plans are not required for any of the following: (i) small business contractors, (ii) personal service contracts, (iii) contracts that will be performed entirely outside of the United States and its territories, or (iv) modifications to existing contracts which do not contain subcontracting potential.
- 12.1.3 For all PG&E contracts, the Contractor shall act in accordance with the Subcontracting Plan in the performance of the Work and in the award of all Subcontracts.
- 12.1.4 The requirements of Exhibit 1 and the successful Bidder's response will be incorporated into the Contract.

### **B-12.2 FEDERAL POLICY**

- 12.2.1 EQUAL EMPLOYMENT OPPORTUNITY AND AFFIRMATIVE ACTION REGULATIONS POLICY: During the performance of this Contract and to the extent they may be applicable, Contractor agrees to comply with all laws, orders, and regulations included by summary or reference in the following paragraphs
  - Executive Order 11246, 41 CFR Part 60-1.4: Equal Opportunity Clause.
  - Executive Order 11246, 41 CFR Part 60-1.8: Nonsegregated Facilities.
  - Vietnam Era Veterans' Readjustment Assistance Act of 1974, 41 CFR Part 60-250.5.a: Equal Opportunity Clause.
  - Vietnam Era Veterans' Readjustment Assistance Act of 1974, 41 CFR Part 60-300.5.a: Equal Opportunity Clause.
  - Section 503 of the Rehabilitation Act of 1973, 41 CFR Part 60-741.5.a: Equal Opportunity Clause.

12.2.2 EXECUTIVE ORDER 13496 – EMPLOYEE RIGHTS UNDER THE NATIONAL LABOR RELATIONS ACT. To the extent applicable, the employee notice requirements set forth in 29 C.F.R. Part 471, Appendix A to Subpart A are hereby incorporated by reference into this Contract.

- B-12.3 PG&E DRUG AND ALCOHOL POLICY: PG&E is committed to maintain and promote job safety and health for all workers at its facilities. In addition, PG&E is determined to protect its employees, customers, and the general public while they are on PG&E property from any harm caused by illegal drug and alcohol use by non-PG&E personnel. To accomplish these objectives, PG&E has established a drug and alcohol policy for access to PG&E facilities by its Contractor and Subcontractor personnel. If any personnel of Contractor or its approved Subcontractors perform any Work or services at PG&E offices and/or other PG&E facilities, then Contractor shall comply with PG&E's Drug and Alcohol Abuse and Testing Policies attached as Exhibit 3 to these General Conditions.
- B-12.4 INJURY AND ILLNESS PREVENTION PROGRAM: In the performance of the Work under this Contract, Contractor acknowledges that it has an effective Injury and Illness Prevention Program which meets the requirements of all applicable laws and regulations, including but not limited to Section 6401.7 of the California Labor Code. Contractor shall ensure that any Subcontractor hired by Contractor to perform any portion of the Work under this Contract shall also have an effective Injury and Illness Prevention Program. The person with the authority and responsibility for implementing and administering Contractor's Injury and Illness and Prevention Program shall execute the Compliance Certificate attached as Exhibit 4.
- B-12.5 DOCUMENT RETENTION AND PRODUCTION REQUIREMENTS: PG&E is committed to maintain documents and records so as to satisfy applicable legal, contractual and regulatory requirements as well as PG&E's on-going business needs; to enable appropriate records management, provide appropriate retrieval and achieve the proper level of security and privacy. In furtherance of this commitment, Contractor agrees to comply with the requirements of Exhibits 6 and 6A, attached to these General Conditions.
- B-12.6 WORK ON PG&E OR PG&E CUSTOMER ASSETS OR PREMISES: The following provisions shall apply to the extent that the Work under the Contract requires any Contractor or Subcontractor personnel (collectively, "Personnel") to have access to PG&E assets, premises, customer property, or logical access to PG&E data or systems (collectively, "Access").

12.6.1 CRIMINAL BACKGROUND CHECKS:

- (i) Contractor warrants and represents that it will not assign any Personnel to work requiring Access unless Contractor has performed a criminal background check on each such individual (either at the time of hiring or during the course of employment). Prior to assigning work requiring Access to any Personnel with one or more criminal convictions during the last seven years, Contractor must consider the gravity of the individual's offense, the time since the conviction, the successful completion of parole/probation, the individual's age at the time of conviction, the number of convictions, and the stability of the individual, including favorable work history. Contractor shall also consider the relation of the offense to the nature of the work the individual will perform.
- (ii) Notwithstanding the foregoing, in no event shall Contractor grant Access to an individual with one or more convictions for a Serious Offense(s), which is defined as violent and sex offenses, crimes against children, domestic violence, fraud, theft (including but not limited to identity theft), embezzlement, all felonies during the last seven years, and/or two or more DUI's in the past three years.
- (iii) Contractor shall maintain documentation related to its criminal background check investigation for all Personnel requiring Access and make it available to PG&E

for audit if requested pursuant to the audit provisions of this Contract.

- (iv) Contractor also agrees to notify PG&E if any of its Personnel requiring Access are charged with or convicted of a Serious Offense during the course of a PG&E assignment.

12.6.2 FITNESS FOR DUTY: Contractor shall ensure that its Personnel granted Access report to work fit for duty. Personnel with Access may not consume alcohol while on duty and/or be under the influence of drugs that impair their ability to work safely. PG&E expects each supplier to have policies in place that requires their employees report to work in a condition that allows them to perform the work safely. For example, employees should not be operating equipment under medication that creates drowsiness. As a federal contractor, PG&E does not recognize nor allow work to be completed under the influence of marijuana, whether or not is it used for medical reasons.

12.6.3 ELIGIBILITY FOR PG&E WORK: When assigning any Personnel to perform Work requiring Access, Contractor shall submit each person's full name and the last four digits of their social security number to PG&E at the following e-mail address: [RecruitingOperations@pge.com](mailto:RecruitingOperations@pge.com). PG&E reserves the right to decline to accept any proposed Personnel, in which case Contractor shall promptly propose a replacement.

B-12.7 COMPLIANCE WITH PG&E'S OUTSOURCED GAS ASSET MANAGEMENT STANDARD: In performance of the Work, Contractor shall comply with the terms and conditions of PG&E's Outsourced Gas Asset Management Standard attached as Exhibit 8 to these General Conditions.

B-12.8 NERC REQUIREMENTS: Pursuant to a directive from the North American Electric Reliability Corporation (NERC), all employees and contractors with unescorted access to facilities and functions that PG&E deems critical to the support of the electricity infrastructure ("Critical Facilities") shall undergo employment background screening and training prior to being granted access to these PG&E facilities. To the extent applicable to the Work, Contractor shall comply with the requirements of Exhibits 9 and 9A, attached hereto and incorporated herein.

B-12.9 SUPPLIER CODE OF CONDUCT: CONTRACTOR, ITS SUBCONTRACTORS AND THEIR SUPPLIERS AT ALL TIERS, SHALL COMPLY WITH PG&E'S SUPPLIER CODE OF CONDUCT IN THE AWARD AND PERFORMANCE OF ALL CONTRACTS AND SUBCONTRACTS. The Supplier Code of Conduct requires that Contractor and each of its Subcontractors demonstrate a strong commitment to compliance, ethics, sustainability and supplier diversity as a foundation to successful business. Contractor must complete its Work for PG&E in full compliance with the Supplier Code of Conduct, as it may be modified from time to time. Contractor shall access, read and comply with PG&E's Supplier Code of Conduct and shall make it available to its Subcontractors and suppliers. The Supplier Code of Conduct is hereby incorporated by reference into this Contract. It is available at PG&E's website, [www.PGE.com](http://www.pge.com), at the following link:  
<http://www.pge.com/includes/docs/pdfs/b2b/purchasing/suppliers/SupplierCodeofConductPGE.pdf>

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## **EXHIBIT C**

**SPECIFIC CONDITIONS TO TECHNICAL SPECIFICATION NUMBER 12107  
Engineering, Procurement and Construction of Burney K2 Replacement  
at the Burney Compressor Station, Order No. 30603707**

**1.0 INTRODUCTION AND PURPOSE**

- 1.1 These Specific Conditions to the Technical Specification Number 12107 for Engineering, Procurement and Construction services, ("EPC") supporting the Burney K2 Replacement located at Burney Compressor Station (BCS) California as requested by Pacific Gas and Electric Company ("PG&E") supplements the Technical Specification and General Conditions and provides additional PG&E requirements supporting contract management and administration that are not provided in the Technical Specification or General Conditions of this Contract. This document assists PG&E and Contractor to effectively manage and control Contractor's Work cost and schedule. This document also provides a listing of the documents contained within the project workbook which has been electronically transmitted and received by Contractor.
- 1.2 The purpose of the Work is to replace natural gas compressor unit Burney K2 and to perform various upgrades to the Burney Compressor Station (BCS) to improve the reliability and operability. The Work includes demolition of existing equipment and facilities. PG&E's Project objectives for improving the safety, reliability, and operating flexibility of the facility are summarized below.
- 1.2.1 Maintain current gas transmission capacity
  - 1.2.2 Replace outdated compressor K2 and associated facilities.
  - 1.2.3 Provide increased flexibility of operation and monitoring.
  - 1.2.4 Demolish and remove unused equipment in accordance with the proposal contained in Attachment 12 if requested.

**2.0 DEFINITIONS** The definitions in the General Conditions, Section 1.0, "Definitions," are supplemented with the terms defined below:

- 2.1 **"Applicable Law"**: Any law including, but not limited to Environmental laws, statute, treaties, rule, regulation, ordinance, code, judgment, enactment, decree, injunction, writ, order, license, permit, consent, approval, agreement or regulation of any Governmental Authority having jurisdiction over a Party or any portion of the Work, in each case applicable to the Work or the rights or obligations of a Party under this Contract.
- 2.2 **"Claim"**: Any Third Party demand, or any civil, criminal, administrative, or investigative claim, action, or proceeding (including arbitration) asserted, commenced or threatened against an entity or person.
- 2.3 **"Commercially Reasonable Efforts"**: Taking all such steps and performing in such a manner as a well-managed company would undertake where it was acting in a determined, prudent and reasonable manner to achieve a particular desired result for its own benefit.
- 2.4 **"Commissioning Complete"**: Commissioning Complete shall be the date on which all start-up and commissioning testing has been completed in accordance with the project Specification 12107.



- 2.5 **"Demobilization"**: The activity to clear the site of all temporary construction facilities upon completion of the direct Work. Complete demobilization includes but is not limited to a completely cleared/removed of all contractor tools, equipment, materials and supplies for the Work site. This portion of the Contract Price that becomes payable only when Contractor has demobilized all its labor, equipment and temporary facilities from the site and returned the allocated temporary facilities area(s) to its pre-mobilization condition.
- 2.6 **"Disposal"**: Total cost associated with disposal of equipment, materials, and hazardous waste.
- 2.7 **"Engineering Completion"**: Engineering Completion shall be the date on which PG&E has approved (1) the Issued for Construction Drawings, including civil, mechanical, electrical, and control as well as (2) the procurement specifications for all major equipment listed in the pricing workbook.
- 2.8 **"Equipment"**: Total cost to provide and operate equipment including all third party equipment (excluding the cost of operating labor), inclusive of associated consumables, overhead and associated profit.
- 2.9 **"Goods"**: Equipment, materials and parts purchased by PG&E from Contractor pursuant to a Contract, whether or not they are manufactured by Contractor.
- 2.10 **"Governmental Authority"**: Any federal, state, local, government, department, commission, board, bureau, agency, official or other regulatory, administrative or governmental authority, including, without limitation, the CPUC.
- 2.11 **"Governmental Authorization"**: Any permit, license, franchise, approval, certificate, consent, ratification, permission, confirmation, endorsement, waiver, registration, qualification or other authorization issued, granted, given or otherwise made available by or under the authority or any Governmental Authority or pursuant to any Legal Requirement.
- 2.12 **"Hourly Rate"**: See "Time-and-Materials."
- 2.13 **"Labor"**: All indirect and direct labor costs, including payroll burdens, benefits, consumables, and expendable materials, small tools, overhead and associated profit.
- 2.14 **"Laws"**: All laws, including the common law and all statutes, by-laws, rules, regulations, ordinances, decrees, orders and codes (including any requirements for permits, certificates, approvals and inspections) that are applicable to a Party in any jurisdiction in which the Work is performed, provided to or used by PG&E.
- 2.15 **"Legal Requirement(s)"**: Any law, statute, ordinance, decree, requirement, order, writ, judgment, injunction, award, treaty, proclamation, convention, rule or regulation (or interpretation of the foregoing) of, and the terms of any Governmental Authorization issued, required, or promulgated by, any Governmental Authority.
- 2.16 **"Loss" or "Losses"**: all damages and other compensation awarded against a Party or agreed to in a settlement approved by the Parties in connection with a Claim, all fines and penalties lawfully imposed on a Party in connection with a Claim and, subject to the provisions of this Contract, all related costs and expenses suffered or incurred as a result of or in connection with such Claim, including reasonable attorneys' fees and disbursements, costs of investigation, litigation, settlement, and judgment, and any taxes, interest and penalties with respect to any of



the foregoing.

- 2.17 **“Material”**: Total cost to procure and supply any and all materials including freight, customs duties and taxes.
- 2.18 **“Mobilization”**: The act of bringing resources to the Work site including all activities that have the resources full functional to commence the Contract Work. A portion of the Contract Price, payable when sufficient site establishment has been mobilized at the jobsite to allow Contractor to commence productive Work.
- 2.19 **“PG&E Authorized Representative”**: Pacific Gas and Electric Company employee authorized to sign a Contract Change Order.
- 2.20 **“PG&E Work Supervisor”**: The employee representing PG&E’s interest in connection with the work described in this Contract or in a subsequent Contract Change Order. Melvin Wong at PG&E shall be the initial PG&E Work Supervisor.
- 2.21 **“PG&E Project Order Number”**: The PG&E Project Order Number is: 30603707.
- 2.22 **“Schedule”**: A document required by PG&E that identifies the sequence and timing of Work and other activities necessary to meet Contract completion dates.
- 2.23 **“Services”**: Includes all labor, material, and equipment necessary to fully perform the requirements of the Contract.
- 2.24 **“Substantial Completion” (“SC”) or “Estimated Date Release to Operations” (“EDRO”)**. SC and EDRO shall be the date upon which: (i) construction is sufficiently complete and is functional for its intended use, in accordance with the Contract Documents, including to enable PG&E to perform full operations, (ii) all systems are tested, commissioned and functioning satisfactorily, (iii) only punch list work or similar minor corrective work remains to be completed, and the completion of such work will not unreasonably interfere with PG&E's operations, and (iv) the remaining punch list work has been agreed by Contractor and PG&E.
- 2.25 **“Third Party”**: A person or entity that is not a Party to this Contract.
- 2.26 **“Time-and-Materials”**: A pricing methodology also referred to as “Hourly Rate,” which specifies one or more hourly rates for Work, inclusive of all overhead costs and administrative and supervisory support, profit, and taxes, and provides for reimbursement of certain out-of-pocket expenses at actual cost plus any applicable mutually agreed fees.
- 2.27 **“Transportation”**: Total cost for transportation of equipment, materials, and hazardous waste offsite for disposal, recycling, or re-use.

### 3 RECITAL AND RELATIONSHIP OF PARTIES.

- 3.1 Contractor is regularly engaged in the business of providing comprehensive EPC and is fully licensed, financed and qualified to perform such services.

### 4 STATEMENT OF WORK

- 4.1 Schedule:

Major Milestone	Phase 1	Phase 2	Notes
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Attachment 7	Burney Gas Compression Package Specifications
Attachment 8	Burney Gas Compressor Package Proposal
Attachment 9	Single Line Drawings from Preliminary Engineering
Attachment 10	PG&E Safety, OQ, and GSE Guidelines and Requirements
Attachment 11	PG&E Gas Transmission Standards, Specifications, & Procedures
Attachment 12	PG&E CAD Specification
Attachment 13	Burney Control Philosophy
Attachment 14	Electronic Version of Preliminary Engineering Deliverables
Attachment 15	Wind and Seismic Design Parameters
Attachment 16	PG&E Project Delivery System Forms

## 5 CONTRACT PRICE FEE, SCHEDULE, AND INVOICES

### 5.1 Pricing Basis

- 5.1.1 Full compensation to Contractor for all the Work in compliance with all terms and conditions of this contract, and for Contractor's payment of all obligations incurred in, or applicable to the performance of the Work, shall be the firm, fixed price of \$40,510,262.00 (hereinafter, "Contract Price") inclusive of all tax, initial surety bond, and builders risk insurance (See Pricing Workbook). The Work will commence after execution of this Contract and pursuant to a Notice to Proceed Agreement. PG&E shall release Contractor to complete long lead procurement for the Compressors on or before January 19, 2016 and the remainder of the long lead procurement required in accordance with the Contractor's approved milestone schedule.
- 5.1.2 The Contract Price and pricing for changes and all other rates set forth herein are firm for the duration of the Work and include all Contractor's costs, expenses, overhead and profit for complete performance of the Work.
- 5.1.3 The firm, fixed prices for mobilization, demobilization and site establishment shall be fixed and firm and shall not be subject to adjustment based upon any additions or deletions to the Contract Price.
- 5.1.4 The Contract Price shall include, but shall not be limited to all taxes, duties, and fees except as otherwise set forth in Section 5.3 Taxes.
- 5.1.5 Failure by Contractor to assess fully the Scope of Work as required and described in the Contract shall not be accepted as a basis for variations to the firm, fixed price and any pricing for changes.
- 5.1.6 All pricing shall be in U.S. Dollars and such pricing is not subject to change in the event of fluctuation in the rate of exchange of any other currency against the U.S. Dollar.
- 5.1.7 All pricing shall include all costs associated with and relative to, performing Work in accordance with and working in accordance with all applicable local, state and federal safety regulations and; as applicable and deemed by PG&E, PG&E's safety, security and fire procedures/requirements or Contractor's safety, security and fire procedures/requirements approved by PG&E.

## **EXHIBIT D**



Contract Change Order

## Contract Change Order

This is Change Order ("CO") No. 1 to Contract No. 2501335149 dated 2/11/2016 between the below-named Contractor ("Contractor"), a California corporation, and Pacific Gas and Electric Company ("PG&E"), a California corporation with its headquarters located at 77 Beale Street, San Francisco, California 94105. Contractor shall perform all Work under this Contract, as amended by this Change Order, pursuant to and in accordance with the terms and conditions of the Contract.

**Contractor's Legal Name:** AECOM Technical Services Inc.

This Contract Change Order consists of 68 page(s).

**Contractor's Address:** 515 S. Flower Street, 4<sup>th</sup> Floor, Ste.1050  
Los Angeles, CA 90071-2201

**Project Name:** Burney K2 Replacement Project

**Job Location:** Burney Compressor Station, California

### CHANGES: The Parties hereby modify the Contract referenced above as follows:

1. Deduct funding by (\$1,100,122.38) for changes in Scope of Work as described below and as more fully described in Attachment 1, RFI/PCO/Cost Breakdown. The revised Contract amount shall not exceed \$39,410,139.62 without prior written authorization in the form of a Contract Change Order signed by both Parties.

RFI0007 PCO-0001 42" Headers & 36" Cooler Bypass Valve \$589,169.00  
RFI0008 PCO-0002 SWPPP Application Support \$7,176.00  
RFI0009 PCO-0003 Impact of Design Drafting Changes \$55,701.00  
RFI0013 PCO-0006 Power Gas Actuators in lieu of Air-powered (\$27,568.00)  
RFI0015 PCO-0007 Request New Electrical Service \$14,126.84  
RFI0017 PCO-0010 Remove new gas cooler from project scope (\$2,364,158.00)  
RFI0001 PCO-0011 Redundant UPS \$240,930.00  
RFI0020 PCO-0012 Coating for 42" HDRS instead of 36" \$24,502.00  
RFI0023 PCO-0015 MLV-82.33 and GOV-1 Fittings \$359,998.78

2. This Change Order represents full and final consideration for the changes described herein, including, but not limited to all adjustments to price, schedule, guaranteed dates and performance criteria. All other terms and conditions shall remain unchanged and in full force and effect.

### ATTACHMENTS: The following are attached to this Contract Change Order and incorporated herein by this reference.

Attachment 1: RFI/PCO/Cost Breakdown, 64 pages

Exhibit 1-A: List of Subcontractors and Disbursement Record, 2 pages

### PRICING CHANGES:

Previous Total Contract Value:	\$40,510,262.00 Lump Sum
Addition or Deduction:	\$(1,100,122.38) Lump Sum
Revised Total Contract Value:	\$39,410,139.62 Lump Sum

All other terms and conditions of the Contract, as it may have been amended by previous Contract Change Order(s), if any, shall remain the same.

THE PARTIES, BY SIGNATURE OF THEIR AUTHORIZED REPRESENTATIVES, HEREBY AGREE TO THE TERMS OF THIS CONTRACT CHANGE ORDER.

PACIFIC GAS AND ELECTRIC COMPANY		CONTRACTOR: AECOM TECHNICAL SERVICES INC.	
Signature	e-Signed by Steve Coleman on 2016-09-19 16:19:33 GMT	Signature	
Name	Steve Coleman	Name	Steve G. Coleman
Title	Sr. Director, Sourcing	Title	VP
Date		Date	9/16/16



Change Order No.  
Contract No. 2501335149  
Page 2 of 2

ADMINISTRATION			
<b>PG&amp;E Negotiator</b>	Tammy Dragotta	<b>Contractor Representative</b>	Steve Petto
<b>Phone</b>	925-328-5173	<b>Phone</b>	510-874-1731
<b>Email:</b>	Tpd5@pge.com	<b>Email:</b>	Steven.petto@aecom.com
<b>Accounting Reference</b>	SC1002952350 Order No. 30603707		

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<b>Distribution Date</b>		
<b>Distribution of Copies</b> GTSubmittals MacKinnon Reed Phil Morrill	<input type="checkbox"/> Document Services (Signed Original Copy) Mail Code N5D 245 MARKET ST., SAN FRANCISCO	<input checked="" type="checkbox"/> Contractor (Signed Original Copy)
	<input checked="" type="checkbox"/> Work Supervisor Mel Wong	<input type="checkbox"/> Manager
	<input checked="" type="checkbox"/> Invoice Approver	<input type="checkbox"/> Supervisor
	<input type="checkbox"/> V.P.	<input type="checkbox"/> Sourcing/ Purchasing
	<input type="checkbox"/> Director	<input type="checkbox"/> Law

## **EXHIBIT E**



Contract Change Order

## Contract Change Order

This is Change Order ("CO") No. 2 to Contract No. 2501335149 dated 2/11/2016 between the below-named Contractor ("Contractor"), a California corporation, and Pacific Gas and Electric Company ("PG&E"), a California corporation with its headquarters located at 77 Beale Street, San Francisco, California 94105. Contractor shall perform all Work under this Contract, as amended by this Change Order, pursuant to and in accordance with the terms and conditions of the Contract.

Contractor's Legal Name: AECOM Technical Services, Inc.

This Contract Change Order consists of 44 page(s).

Contractor's Address: 300 Lakeside Drive, Suite 400  
Oakland, CA 94612

Project Name: Burney K2 Replacement Project

Job Location: Burney Compressor Station, California

**CHANGES:** The Parties hereby modify the Contract referenced above as follows:

1. Increase funding by \$1,255,843.50 for changes in Scope of Work as described below and as more fully described in Attachment 1, RFI/PCO/Cost Breakdown. The revised Contract amount shall not exceed \$40,665,983.12 without prior written authorization in the form of a Contract Change Order signed by both Parties.

RFI	PCO	Short Description	Order No.	Amount
0010	0023	Fiber Based DCS	30603707	{532,709.52}
0012	0005	Enlarge the Aux Building	30603707	5207,014.92
0027	0016	Response to Request for Fire Suppression Study	30603707	535,854.45
0028	0020	PLC Programming	30603707	5498,577.00
0029	0018	Inspect and Service Existing Gas Cooler	30603707	559,895.38
0031	0019	Air Compressor System - Preferred Supplier	30603707	557,215.41
0037	0024	Smart MOCs, Cap Bank, HRCs, VFD Ducts	30603707	5428,895.13
N/A	0021	Schedule of Values Revision	30603707	50.00
TOTAL				\$1,255,843.50

2. This Contract Change Order represents full and final consideration for the changes described herein, including, but not limited to all adjustments to price, schedule, guaranteed dates and performance criteria. All other terms and conditions shall remain unchanged and in full force and effect.

**ATTACHMENTS:** The following are attached to this Contract Change Order and incorporated herein by this reference.

Attachment 1: RFI/PCO/Cost Breakdown, 40 pages

Exhibit 1-A: List of Subcontractors and Disbursement Record, 2 pages

<b>PRICING CHANGES:</b>	Previous Total Contract Value:	\$39,410,139.62	Lump Sum
	Addition or Deduction:	\$ 1,255,843.50	Lump Sum
	Revised Total Contract Value:	\$40,665,983.12	Lump Sum

All other terms and conditions of the Contract, as it may have been amended by previous Contract Change Order(s), if any, shall remain the same.

**THE PARTIES, BY SIGNATURE OF THEIR AUTHORIZED REPRESENTATIVES, HEREBY AGREE TO THE TERMS OF THIS CONTRACT CHANGE ORDER.**

PACIFIC GAS AND ELECTRIC COMPANY		CONTRACTOR: AECOM TECHNICAL SERVICES INC.	
Signature	e-Signed by Steve Coleman on 2017-01-17 17:46:16 GMT	Signature	<i>Steve Petto</i>
Name	Steve Coleman	Name	STEVEN R. PETTO
Title	Sr. Director, Sourcing	Title	ASSOCIATE VICE PRESIDENT
Date		Date	JAN 9, 2017

Change Order No. 2  
Contract No. 2501335149  
Page 2 of 2

ADMINISTRATION			
<b>PG&amp;E Negotiator</b>	Tammy Dragotta	<b>Contractor Representative</b>	Steve Petto
<b>Phone</b>	925-328-5173	<b>Phone</b>	510-874-1731
<b>Email:</b>	Tpd5@pge.com	<b>Email:</b>	Steven.petto@aecom.com
<b>Accounting Reference</b>	SC1003054948 Order No. 30603707		

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<b>Distribution of Copies</b> GTSubmittals MacKinnon Reed Phil Morrill	<input type="checkbox"/> Document Services (Signed Original Copy) Mail Code N5D 245 MARKET ST., SAN FRANCISCO	<input checked="" type="checkbox"/> Contractor (Signed Original Copy)	
	<input checked="" type="checkbox"/> Work Supervisor Mel Wong	<input type="checkbox"/> Manager	
	<input checked="" type="checkbox"/> Invoice Approver	<input type="checkbox"/> Supervisor	
	<input type="checkbox"/> V.P.	<input type="checkbox"/> Sourcing/ Purchasing	
	<input type="checkbox"/> Director	<input type="checkbox"/> Law	

## **EXHIBIT F**

## Contract Change Order

This is Change Order ("CO") No. 3 to Contract No. 2501335149 dated 2/11/2016 between the below-named Contractor ("Contractor"), a California corporation, and Pacific Gas and Electric Company ("PG&E"), a California corporation with its headquarters located at 77 Beale Street, San Francisco, California 94105. Contractor shall perform all Work under this Contract, as amended by this Change Order, pursuant to and in accordance with the terms and conditions of the Contract.

<b>Contractor's Legal Name:</b>	AECOM Technical Services, Inc.	This Contract Change Order consists of 11 page(s).
<b>Contractor's Address:</b>	300 Lakeside Drive, Suite 400 Oakland, CA 94612	
<b>Project Name:</b>	Burney K2 Replacement Project	
<b>Job Location:</b>	Burney Compressor Station, California	

### CHANGES: The Parties hereby modify the Contract referenced above as follows:

Change Order 3 is hereby issued to:

1. Increase funding by \$814,150.01 for changes in Scope of Work as described below and as more fully described in Attachment 1, RFI/PCO/Cost Breakdown. The revised Contract amount shall not exceed \$41,480,133.13 without prior written authorization in the form of a Contract Change Order signed by both Parties.
2. This Contract Change Order represents full and final consideration for the changes described herein, including, but not limited to all adjustments to price, schedule, guaranteed dates and performance criteria. All other terms and conditions shall remain unchanged and in full force and effect.

RFI	PCO	Short Description	Order No.	Amount
0034	0022	Revised Control Valve Requirements for Turbine	30603707	\$736,215.18
0039	0026	Epoxy Floor Coating	30603707	\$77,934.83
<b>TOTAL</b>				<b>\$814,150.01</b>

### ATTACHMENTS: The following are attached to this Contract Change Order and incorporated herein by this reference.

Attachment 1: RFI/PCO/Cost Breakdown, 7 pages

Exhibit 1-A: List of Subcontractors and Disbursement Record, 2 pages

<b>PRICING CHANGES:</b>	Previous Total Contract Value:	\$40,665,983.12 Lump Sum
	Addition or Deduction:	\$ 814,150.01 Lump Sum
	Revised Total Contract Value:	\$41,480,133.13 Lump Sum

All other terms and conditions of the Contract, as it may have been amended by previous Contract Change Order(s), if any, shall remain the same.

### THE PARTIES, BY SIGNATURE OF THEIR AUTHORIZED REPRESENTATIVES, HEREBY AGREE TO THE TERMS OF THIS CONTRACT CHANGE ORDER.

PACIFIC GAS AND ELECTRIC COMPANY		CONTRACTOR: AECOM TECHNICAL SERVICES INC.	
Signature	e-Signed by Steve Coleman on 2017-02-21 18:22:20 GMT	Signature	<i>Steven R. Petto</i>
Name	Steve Coleman	Name	Steven Petto
Title	Sr. Director, Sourcing	Title	Associate Vice President
Date		Date	February 20, 2017

Change Order No. 3  
Contract No. 2501335149  
Page 2 of 2

ADMINISTRATION			
<b>PG&amp;E Negotiator</b>	Tammy Dragotta	<b>Contractor Representative</b>	Patrick Dunn Steven Petto
<b>Phone</b>	925-328-5173	<b>Phone</b>	510-874-1731
<b>Email:</b>	Tpd5@pge.com	<b>Email:</b>	Patrick.dunn@aecom.com steven.petto@aecom.com
<b>Accounting Reference</b>	SC1003090058 Order No. 30603707		

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<b>Distribution of Copies</b> GTSubmittals MacKinnon Reed Phil Morrill	<input type="checkbox"/> Document Services (Signed Original Copy) Mail Code N5D 245 MARKET ST., SAN FRANCISCO	<input checked="" type="checkbox"/> Contractor (Signed Original Copy)	
	<input checked="" type="checkbox"/> Work Supervisor Mel Wong	<input type="checkbox"/> Manager	
	<input checked="" type="checkbox"/> Invoice Approver	<input type="checkbox"/> Supervisor	
	<input type="checkbox"/> V.P.	<input type="checkbox"/> Sourcing/ Purchasing	
	<input type="checkbox"/> Director	<input type="checkbox"/> Law	

## **EXHIBIT G**





Contract Change Order

## Contract Change Order

This is Change Order ("CO") No. 4 to Contract No. 2501335149 dated 2/11/2016 between the below-named Contractor ("Contractor"), a California corporation, and Pacific Gas and Electric Company ("PG&E"), a California corporation with its headquarters located at 77 Beale Street, San Francisco, California 94105. Contractor shall perform all Work under this Contract, as amended by this Change Order, pursuant to and in accordance with the terms and conditions of the Contract.

**Contractor's Legal Name:** AECOM Technical Services, Inc.

This Contract Change Order consists of 30 page(s).

**Contractor's Address:** 300 Lakeside Drive, Suite 400  
Oakland, CA 94612

**Project Name:** Burney K2 Replacement Project

**Job Location:** Burney Compressor Station, California

**CHANGES:** The Parties hereby modify the Contract referenced above as follows:

Change Order 4 is hereby issued to:

1. Increase funding by \$918,072.06 for changes in Scope of Work as described below and as more fully described in Attachment 1, RFI/PCO/Cost Breakdown. The revised Contract amount shall not exceed \$42,398,205.19 without prior written authorization in the form of a Contract Change Order signed by both Parties.
2. This Contract Change Order represents full and final consideration for the changes described herein, including, but not limited to all adjustments to price, schedule, guaranteed dates and performance criteria. All other terms and conditions shall remain unchanged and in full force and effect.

**ATTACHMENTS:** The following are attached to this Contract Change Order and incorporated herein by this reference.

Attachment 1: RFI/PCO/Cost Breakdown, 26 pages

Exhibit 1-A: List of Subcontractors and Disbursement Record, 2 pages

### PRICING CHANGES:

Previous Total Contract Value:	\$41,480,133.13	Lump Sum
Addition or Deduction:	\$ 918,072.06	Lump Sum
Revised Total Contract Value:	\$42,398,205.19	Lump Sum

All other terms and conditions of the Contract, as it may have been amended by previous Contract Change Order(s), if any, shall remain the same.

THE PARTIES, BY SIGNATURE OF THEIR AUTHORIZED REPRESENTATIVES, HEREBY AGREE TO THE TERMS OF THIS CONTRACT CHANGE ORDER.

PACIFIC GAS AND ELECTRIC COMPANY		CONTRACTOR: AECOM TECHNICAL SERVICES INC.	
Signature	e-Signed by David Kevane on 2017-03-30 16:54:30 GMT	Signature	
Name	Steve Coleman	Name	Steven Petto
Title	Sr. Director, Sourcing	Title	Associate Vice President
Date		Date	March 29, 2017



Change Order No. 4  
 Contract No. 2501335149  
 Page 2 of 2

ADMINISTRATION			
<b>PG&amp;E Negotiator</b>	Tammy Dragotta	<b>Contractor Representative</b>	Patrick Dunn Steven Petto
<b>Phone</b>	925-328-5173	<b>Phone</b>	510-874-1731
<b>Email:</b>	Tpd5@pge.com	<b>Email:</b>	Patrick.dunn@aecom.com Steven.petto@aecom.com
<b>Accounting Reference</b>	SC1003128229 Order No. 30603707		

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<b>Distribution of Copies</b> GTSubmittals MacKinnon Reed Phil Morrill	<input type="checkbox"/> Document Services (Signed Original Copy) Mail Code N5D 245 MARKET ST., SAN FRANCISCO	<input checked="" type="checkbox"/> Contractor (Signed Original Copy)
	<input checked="" type="checkbox"/> Work Supervisor Mel Wong	<input type="checkbox"/> Manager
	<input checked="" type="checkbox"/> Invoice Approver	<input type="checkbox"/> Supervisor
	<input type="checkbox"/> V.P.	<input type="checkbox"/> Sourcing/ Purchasing
	<input type="checkbox"/> Director	<input type="checkbox"/> Law

## **EXHIBIT H**



Contract Change Order

## Contract Change Order

This is Change Order ("CO") No. 5 to Contract No. 2501335149 dated February 11, 2016 between the below-named Contractor ("Contractor"), a California corporation, and Pacific Gas and Electric Company ("PG&E"), a California corporation with its headquarters located at 77 Beale Street, San Francisco, California 94105. Contractor shall perform all Work under this Contract, as amended by this Change Order, pursuant to and in accordance with the terms and conditions of the Contract.

Contractor's  
Legal Name: AECOM Technical Services, Inc.

This Contract Change Order consists of 26 page(s).

Contractor's  
Address: 300 Lakeside Drive, Suite 400  
Oakland, CA 94612

Project Name: Burney K2 Replacement Project

Job Location: Burney Compressor Station, California

**CHANGES:** The Parties hereby modify the Contract referenced above as follows:

1. This Contract Change Order 5 increases the Total Contract Value by \$627,790.16 to \$43,025,995.35 for the additional Work detailed in Attachment 1, RFI/PCO/Cost Breakdown. The Revised Total Contract Value shall not exceed \$43,025,995.35 without prior written authorization in the form of a Contract Change Order signed by both Parties.
2. This Contract Change Order 5 represents full and final consideration for the changes described herein, including, but not limited to all adjustments to price, schedule, guaranteed dates and performance criteria.

**ATTACHMENTS:** The following are attached to this Contract Change Order and incorporated herein by this reference.

Attachment 1: RFI/PCO/Cost Breakdown, 22 pages

Exhibit 1A: List of Subcontractors and Disbursement Record, 2 pages

<b>PRICING CHANGES:</b>	Previous Total Contract Value:	\$42,398,205.19 Lump Sum
	Addition or Deduction:	\$ 627,790.16 Lump Sum
	Revised Total Contract Value:	<b>\$43,025,995.35</b> Lump Sum

All other terms and conditions of the Contract, as it may have been amended by previous Contract Change Order(s), if any, shall remain the same.

**THE PARTIES, BY SIGNATURE OF THEIR AUTHORIZED REPRESENTATIVES, HEREBY AGREE TO THE TERMS OF THIS CONTRACT CHANGE ORDER.**

PACIFIC GAS AND ELECTRIC COMPANY		CONTRACTOR: AECOM TECHNICAL SERVICES INC.	
Signature	e-Signed by Steve Coleman on 2017-06-08 21:07:32 GMT	Signature	<i>Steven R. Petto</i>
Name	Steve Coleman	Name	Steven R. Petto
Title	Sr. Director, Sourcing	Title	Associate Vice President
Date		Date	June 6, 2017



Change Order No. 5  
 Contract No. 2501335149  
 Page 2 of 2

ADMINISTRATION			
PG&E Negotiator	Sharon Stone	Contractor Representative	Steve Petto
Phone	925-328-5159	Phone	510-874-1731
Email:	Sls4@pge.com	Email:	steven.petto@aecom.com
Accounting Reference	30603707		

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Distribution Date		
Distribution of Copies	<input type="checkbox"/> Document Services (Signed Original Copy) Mail Code NSD 245 MARKET ST., SAN FRANCISCO	<input checked="" type="checkbox"/> Contractor (Signed Original Copy)
	<input type="checkbox"/> Work Supervisor	<input type="checkbox"/> Manager
	<input type="checkbox"/> Invoice Approver	<input type="checkbox"/> Supervisor
	<input type="checkbox"/> V.P.	<input type="checkbox"/> Sourcing/ Purchasing
	<input type="checkbox"/> Director	<input type="checkbox"/> Law

## **EXHIBIT I**





## Contract Change Order

This is Change Order ("CO") No. 6 to Contract No. 2501335149 dated February 11, 2016 between the below-named Contractor ("Contractor"), a California corporation, and Pacific Gas and Electric Company ("PG&E"), a California corporation with its headquarters located at 77 Beale Street, San Francisco, California 94105. Contractor shall perform all Work under this Contract, as amended by this Change Order, pursuant to and in accordance with the terms and conditions of the Contract.

Contractor's Legal Name: AECOM Technical Services, Inc.

This Contract Change Order consists of 50 page(s).

Contractor's Address: 300 Lakeside Drive, Suite 400  
Oakland, CA 94612

Project Name: Burney K2 Replacement Project

Job Location: Burney Compressor Station, California

**CHANGES:** The Parties hereby modify the Contract referenced above as follows:

1. The Contract completion date shall be extended from December 31, 2017 to March 31, 2018.
2. This Contract Change Order 6 increases the Total Contract Value by \$693,852.01 to \$43,719,847.36 for the additional Work detailed in Attachment 1, RFI/PCO/Cost Breakdown. The Revised Total Contract Value shall not exceed \$43,719,847.36 without prior written authorization in the form of a Contract Change Order signed by both Parties.
3. This Contract Change Order 6 represents full and final consideration for the changes described herein, including, but not limited to all adjustments to price, schedule, guaranteed dates and performance criteria.

**ATTACHMENTS:** The following are attached to this Contract Change Order and incorporated herein by this reference.

Attachment 1: RFI/PCO/Cost Breakdown, 46 pages

Exhibit 1 and 1A: Prime Supplier Subcontracting Plan, 2 pages

**PRICING CHANGES:**

Previous Total Contract Value:	\$43,025,995.35 @ Lump Sum
Addition or Deduction:	\$ 693,852.01 @ Lump Sum
Revised Total Contract Value:	<b>\$43,719,847.36 @ Lump Sum</b>

All other terms and conditions of the Contract, as it may have been amended by previous Contract Change Order(s), if any, shall remain the same.

**THE PARTIES, BY SIGNATURE OF THEIR AUTHORIZED REPRESENTATIVES, HEREBY AGREE TO THE TERMS OF THIS CONTRACT CHANGE ORDER.**

PACIFIC GAS AND ELECTRIC COMPANY		CONTRACTOR: AECOM TECHNICAL SERVICES INC.	
Signature	e-Signed by Steve Coleman on 2017-12-11 23:38:35 GMT	Signature	
Name	Steve Coleman	Name	Steven R. Petto
Title	Sr. Director, Sourcing	Title	Associate Vice President
Date		Date	December 7, 2017



Change Order No. 6  
 Contract No. 2501335149  
 Page 2 of 2

ADMINISTRATION			
PG&E Negotiator	Sharon Stone	Contractor Representative	Patrick Dunn Steve Petto
Phone	925-328-5159	Phone	510-874-1731
Email:	Sls4@pge.com	Email:	Patrick.dunn@aecom.com steven.petto@aecom.com
Accounting Reference	30603707		

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Distribution Date		
Distribution of Copies	<input type="checkbox"/> Document Services (Signed Original Copy) Mail Code N5D 245 MARKET ST., SAN FRANCISCO	<input checked="" type="checkbox"/> Contractor (Signed Original Copy)
	<input type="checkbox"/> Work Supervisor Mel Wong	<input type="checkbox"/> Manager
	<input type="checkbox"/> Invoice Approver	<input type="checkbox"/> Supervisor
	<input type="checkbox"/> V.P.	<input type="checkbox"/> Sourcing/ Purchasing
	<input type="checkbox"/> Director	<input type="checkbox"/> Law

## **EXHIBIT J**

PACIFIC GAS AND ELECTRIC COMPANY  
GAS TRANSMISSION  
SAN RAMON, CALIFORNIA

PROJECT SPECIFIC INFORMATION, SPECIFICATION NUMBER 12107  
FOR ENGINEERING, PROCUREMENT AND CONSTRUCTION  
FOR BURNEY K2 COMPRESSOR UNIT REPLACEMENT  
AT BURNEY COMPRESSOR STATION,  
NATURAL GAS TRANSMISSION LINES 400/401, ORDER 30603707

Requirements Comprised of:

- General Conditions and Exhibits
- Specific Conditions to Specification 12107
- This Specification 12107 and Attachments

The following Attachments are provided in CD form, enclosed with this Request for Proposal:

- Attachment 1 Scope of Work
- Attachment 2 Burney Location Map
- Attachment 3 Burney Compressor Preliminary Design Basis
- Attachment 4 Proposed Burney Operating Diagram
- Attachment 5 Proposed Burney Main Gas P&ID
- Attachment 6 Various Proposed Station Plot Plan Drawings
- Attachment 7 Gas Turbine Centrifugal Compressor Package Specification
- Attachment 8 Burney Gas Compressor Package Proposal
- Attachment 9 Single Line Drawings from Preliminary Engineering
- Attachment 10 PG&E Safety, OQ, and GSE Guidelines and Requirements
- Attachment 11 PG&E Gas Transmission Standards, Specifications, & Procedures
- Attachment 12 PG&E CAD Specifications and Guidelines
- Attachment 13 Burney Control Philosophy
- Attachment 14 Electronic Version of Preliminary Engineering Deliverables
- Attachment 15 Wind and Seismic Design Parameters
- Attachment 16 PG&E Project Delivery System Forms

BIDDER SIGN HERE TO INDICATE THIS SPECIFICATION HAS BEEN USED IN  
PREPARATION OF THE BID

Firm: \_\_\_\_\_ By: (print)\_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

SPECIFICATION NUMBER 12107  
PROJECT SPECIFIC INFORMATION  
FOR ENGINEERING, PROCUREMENT AND CONSTRUCTION  
AT BURNEY COMPRESSOR STATION,

SECTION	TABLE OF CONTENTS SUBJECT	PAGE NO.
1	DEFINITIONS -----	PSI-3
2	OBJECTIVE -----	PSI-4
3	SITE INFORMATION-----	PSI-5
4	SCOPE OF WORK -----	PSI-5
5	WORK PHASES -----	PSI-8
6	PROJECT SCHEDULE -----	PSI-9
7	COMMUNICATION -----	PSI-11
8	PROJECT AND CONSTRUCTION MANAGEMENT----	PSI-15
9	UNIFIER DOCUMENT MANAGEMENT-----	PSI-17
10	QUALITY ASSURANCE AND QUALITY CONTROL -	PSI-17
11	TURBINE/COMPRESSOR UNIT -----	PSI-20
12	PIPING AND MECHANICAL EQUIPMENT -----	PSI-21
13	ELECTRICAL SYSTEM -----	PSI-24
14	CONTROL SYSTEM -----	PSI-25
15	CATHODIC PROTECTION -----	PSI-27
16	CIVIL, STRUCTURAL, AND BUILDINGS -----	PSI-27
17	PAINTING -----	PSI-29
18	PG&E WORK SCOPE -----	PSI-30
19	DESIGN DRAFTING -----	PSI-31
20	PRODUCTION ENGINEERING -----	PSI-33
21	PROCUREMENT -----	PSI-39
22	CONSTRUCTION REQUIREMENTS -----	PSI-40
23	CONSTRUCTION SITE SAFETY -----	PSI-63
24	SITE ENVIRONMENTAL AND HAZMAT -----	PSI-66
25	CONSTRUCTION SUBMITTALS -----	PSI-70
26	PG&E CONSTRUCTION WORK -----	PSI-73
27	DEMOLITION AND REMOVAL -----	PSI-74
28	COMMISSIONING AND ACCEPTANCE TESTS -----	PSI-75
29	MAINTENANCE -----	PSI-78
30	TRAINING FOR PG&E -----	PSI-78
31	DOCUMENTATION, MANUALS AND DRAWINGS ---	PSI-82
32	CODES AND STANDARDS -----	PSI-88

## 1 DEFINITIONS

The following definitions are in addition to those provided in the General Conditions and Specific Conditions.

1.1	"As-Built"	The manner, method and/or nature of actual physical plant construction.
1.2	ATC	Authority to Construct Permit required by the Air Pollution Control District
1.3	BOM	Bill of Materials
1.4	CBC	California Building Code
1.5	CPM	Critical Path Method
1.6	BCS	Burney Compressor Station
1.7	BK1	Burney K-1 Compression Unit
1.8	BK2	Burney K-2 Compression Unit
1.9	DOT	United States Department of Transportation
1.10	EPA	Environmental Protection Agency
1.11	EPC	Engineer, Procure, Construct
1.12	FAT	Factory Acceptance Testing
1.13	GPR	Ground Penetrating Radar
1.14	GPS	Global Positioning System
1.15	HMBP	Hazardous Materials Business Plan
1.16	HMI	Human Machine Interface
1.17	HVAC	Heating Ventilating and Air Conditioning
1.18	HW	Hazardous Waste
1.19	IFC	Issued for Construction



1.20	I\O	Input\Output
1.21	Jeeping	An electrical spark test to identify defects in pipe coating
1.22	MSDS	Material Safety Data Sheet(s)
1.23	NFPA	National Fire Protection Association
1.24	NTP	Notice to Proceed - Written authorization from PG&E to Contractor to initiate all or part of the Work, including any changes or additions as provided by Article 10 of the General Conditions
1.25	OSHA	Federal Occupational Safety & Health Administration
1.26	Cal-OSHA	California Occupational Safety & Health Administration
1.27	P&ID	Piping and Instrumentation Diagram
1.28	PDS	Project Delivery System
1.29	PLC	Programmable Logic Controller
1.30	PSI	Project Specific Information (Specification)
1.31	QA/QC	Quality Assurance/Quality Control
1.32	Roping	Pipeline curvature maintaining elastic deformation
1.33	SCADA	Supervisory Control and Data Acquisition
1.34	UBC	Uniform Building Code
1.35	Unifier	PG&E's Document Management System, provided by Oracle-Primavera

## 2 OBJECTIVE

PG&E owns and operates Line 400/401, a natural gas transmission pipeline system in Northern California. The Burney Compressor Station is part of the Line 400/401 pipeline system. PG&E studies indicate that replacement of Burney K-2 compressor and

modifications to Burney Compressor Station are needed to maintain reliability meet customer demands.

- 2.1 PG&E's objective for the Work is to replace natural gas compressor unit Burney K2 and to perform various upgrades to the Burney Compressor Station (BCS) to improve the reliability and operability. The Work also includes demolition of existing equipment and facilities. The modified BCS must be capable of flowing 2.2 billion standard cubic feet per day of natural gas. Compressor Unit K-1 at BCS was previously removed.
- 2.2 The existing equipment is becoming difficult to maintain and spare parts are becoming unavailable. Failure to replace the Burney K-2 compressor and associated equipment may result in a reduction in the flow capability of Line 400/401.
- 2.3 Work includes installation, and disposal lifecycle activities that reduce risk by improving safety, performance, and reliability of PG&E gas asset families that include, but are not limited to gas transmission pipelines, compression, measurement, and control.

### **3 SITE INFORMATION**

The site information is provided to Contractor for consideration in Contractor's design, scheduling, resource requirements determination, construction, Work coordination, and estimating purposes.

- 3.1 The Burney Compressor Station is located in Shasta County of Northern California. BCS is approximately 1.5 miles northeast of Burney, California.
- 3.2 Refer to the Preliminary Design Basis, Attachment 3, used in the Preliminary Engineering phase for the replacement of K-2 for site- specific conditions. Requirements outlined in Attachment 3 shall apply to all aspects of this Work.

### **4 SCOPE OF WORK**

- 4.1 The Work shall include, but not be limited to the Scope of Work (Attachment 1). Contractor shall engineer, procure, construct and commission the replacement compressor or compressors, auxiliary equipment and support facilities to achieve fully operable systems. Except as specifically provided herein, Contractor shall furnish all project management, construction management, engineering, procurement, construction, installation, commissioning, demolition, labor, tools,

parts, equipment, supplies, facilities, and transportation necessary to accomplish PG&E's objective stated above, whether or not each item or component necessary to do so is described herein.

#### 4.2 Engineering Work Completed To-Date:

4.2.1 30% Design Deliverables: the 30% Design Deliverables package was developed in 2014 by others. These deliverables are included with this RFP in Attachment 14. The electronic files in their native format will be provided to the successful contractor for further development.

4.2.1.1 The 30% Design Deliverables were based on two (2) Solar Taurus 70 compressor units in separate buildings located in an undisturbed area of the existing compressor station site.

4.2.1.2 It is the intent of this RFP that a minimum of changes be made to the existing 30% Design Deliverables. However, subsequent to completion of the 30% package, it was determined the existing station discharge gas cooler needs to be expanded.

4.2.2 Air Permit to Construct: PG&E has obtained the draft Authority to Construct (ATC) and is currently finalizing the permit with the local air district.

4.2.2.1 The air permit application was based on two (2) Solar Taurus 70 compressor units in separate buildings located in an undisturbed area of the existing compressor station site.

4.2.3 Gas Turbine Compressor Unit RFP: PG&E has issued an RFP for turbine-compressor units to 3 manufacturers and has selected the units through a formal review process.

4.3 The existing K-2 compressor will be removed and replaced with a new compressor unit tagged BK2. It is PG&E's plan to continue to use the existing suction separation equipment (subject to further evaluation per this contract) and the existing connection points for Lines L-400 and L-401.

4.4 Additional major equipment to be installed includes; station and unit recycle valves, station controls, unit controls, upgrades to the station electrical systems, associated switchgear, MCC, UPS, Station Battery, Automatic Transfer System, station compressed air system, new auxiliary building, air compressor replacement, standby generator replacement, and a new compressor building. Contractor shall be responsible for coordination, interface, purchase, delivery,

installation, start-up, commissioning, and warranty of all new equipment and systems to accomplish PG&E's objective stated in Section 2 of this Specification unless specifically defined otherwise.

- 4.5 The Burney Compressor Station shall be designed for unmanned operation. It shall be capable of remote control through the gas SCADA system by PG&E's Gas Control Center in San Ramon, CA.
- 4.6 Contractor shall perform studies and investigations to support design, construction, and operation. These studies include, but are not limited to: a geotechnical investigation for design of foundations and identifying underground structures; a 3-Dimensional model of the station facilities; a piping flexibility analysis to evaluate the stress levels in station piping; a noise study to evaluate the BCS will operate within allowable noise levels; a study to limit BCS pressure drop to 10 psi; an evaluation of the adequacy of the gas cooling systems; a station load flow, short circuit, arc flash, co-ordination/protection analysis' and generator/transformer/circuit breaker /cable/conduit/battery/UPS sizing studies.
- 4.7 Contractor shall evaluate and if necessary upgrade any other system not listed to ensure that the project objectives and requirements from this Specification are accomplished. Contractor shall design and construct the new facilities to reduce the methane emissions generated from BCS. Contractor shall propose methods to accomplish this to PG&E for approval.
- 4.8 As provided in Section 26 of this Specification, PG&E may elect to have certain Work described herein performed by various departments within PG&E
- 4.9 Contractor shall apply the following criteria when selecting equipment and components. This criteria is hierarchical, attempt to apply the first criteria, if it does not apply, use the next or second criteria, if does not apply continue through the list. Equipment and components shall be equivalent or approved equal to the equipment identified and defined by these selection criteria. Any changes, upgrades or deviations from these criteria must be approved by PG&E. All equipment, devices and components shall comply with applicable PG&E standards (see Attachments 10 and 11). Note that PG&E does not maintain approved equipment specifications for many of the major equipment items as identified in Attachment 1 and that Contractor will be required to develop these.
  - 4.9.1 Scope of Work (see Attachment 1)
  - 4.9.2 Turbine/compressor package (see Attachments 7 and 8)
  - 4.9.3 The Engineering Design Criteria (see Attachment 3)

4.9.4 Burney Control Philosophy (see Attachment 13).

## **5 WORK PHASES**

- 5.1 The Work hereunder has been divided into two phases as follows. Contractor shall not commence any Work nor incur any charge under each phase of the Work unless authorized, in writing, by PG&E. A separate PG&E Notice to Proceed shall be required to authorize Contractor to proceed with each phase of the Work. PG&E reserves the right to provide Contractor with a Notice to Proceed for either phase, or any portion of either phase, of the Work at any time following Contract award and prior to expiration of this Contract.
- 5.2 In the event PG&E's Notice to Proceed (NTP) for either phase of the Work is provided to Contractor at such a time as to require Contractor to amend the commence or complete date for any item on Contractor's project schedule provided for in Section 4 of the Specific Conditions to this Specification, Contractor shall immediately so advise the PG&E Project Manager and provide PG&E an amended project schedule. Such amended schedule shall describe all consequence and impact of PG&E's Notice to Proceed.
- 5.3 Phase I. The phase I Work includes detailed production engineering, equipment specification, completion of design, procurement long lead material, and the development of all construction documents for the replacement of BK2 and modifications to BCS. All work for this phase will be in accordance with PG&E's Project Delivery System (PDS) (see Attachment 16).
- 5.3.1 Engineering and constructability reviews will be conducted for the completion of 30, 60 and 90 percent design completion and for the Issued for Construction (IFC) design.
- 5.3.2 Design development and preparation of construction documents will be completed to 100 percent level after incorporating the design review comments at the IFC review. The 100 percent IFC documents will be complete and suitable for construction.
- 5.3.3 Any long or moderate lead time material that must be purchased in advance of Phase II and must be identified and purchased during Phase I.
- 5.3.4 All IFC documents shall be complete and suitable for Contractor's construction Work and shall convey all construction requirements.

#### 5.4 Phase II

- 5.4.1 The Phase II work includes all field construction work at BCS for station modifications and improvements. The Phase II Work includes procurement of materials and providing responses to Requests for Information. Contractor will be responsible for managing on-site construction work and coordinating with the BCS Owner.
- 5.4.2 The construction Work at the site will include, but not be limited to: Construction management and supervision; Management of labor, tools, and material necessary to perform the Work; Obtaining the required equipment to complete the Work; Supervision of installation of equipment; Maintenance; Training; Documentation and Supervision of commissioning
- 5.4.3 During Phase II, Contractor shall complete demolition and removal of existing equipment and structures consistent with this Specification. The Contractor shall remove the existing BK2 compressor and turn it over to PG&E on site.

### 6 PROJECT SCHEDULE

- 6.1 By signature to this Contract, Contractor acknowledges that the BCS is an operating facility and that any Work-related activity that could interfere with the operation of the facility shall be minimized and coordinated and approved by PG&E prior to commencement of any such Work.
- 6.2 Work shall be scheduled and performed by Contractor in such a manner as to provide for testing and release of completed Work to PG&E to meet required dates. In the event PG&E so requests, Contractor shall fully test and release to PG&E segments of the Work as they are completed and meet the schedule outlined in Section 4 of the Specific Conditions to this Specification.
- 6.3 Contractor shall complete the Work in time to meet the milestone and project completion dates. A final milestone schedule in Primavera (P6) shall be developed by Contractor and provided to PG&E no later than thirty (30) calendar days from the date of PG&E's notice of award of Contract. Such project schedule shall be in sufficient detail to show drawing production schedule, critical tasks, shop and on-site testing, Contractor submittals, sequence of tasks, task duration, task start and task completion dates. In the event Contractor's final milestone schedule differs materially from the milestone schedule submitted by Contractor

drawings. Multiple copies of as-built mark-ups are not allowed.

- 19.6 Contractor shall provide as-built redline mark-ups immediately after unit Commissioning. Contractor shall provide as-built redline mark-ups for elementary drawings and operating diagrams two weeks prior to Commissioning, excepting only punch list items.
- 19.7 Contractor shall request Engineering Documents from the PG&E GTE&D GSM Records Center ([GSMRecords@pge.com](mailto:GSMRecords@pge.com)) located at 6121 Bollinger Canyon Rd, San Ramon, CA 94583. Request instructions shall be followed in accordance to the PG&E GTE&D Drafting Standards, "RECORDS" section.

19.7.1 Specific response times to Engineering Document requests are outlined in the PG&E GTE&D Drafting Standards, "RECORDS" section.

## 20 PRODUCTION ENGINEERING

- 20.1 No later than thirty (30) calendar days following receipt of PG&E's notice of award of Contract, Contractor shall provide to PG&E an estimate of the total design hours required to perform the Work hereunder, by classification; for example, Drafting, Electrical Engineer, Civil Engineer. Contractor shall complete the Fee Schedule in the Pricing Workbook to support this estimate.
- 20.1.1 No later than forty-five (45) calendar days following the conclusion of all Work, Contractor shall provide to PG&E a detailed itemization of the actual design hours performed to accomplish the Work, by classification.
- 20.2 Contractor shall provide the following engineering services. Contractor's design and engineering shall incorporate and be compatible with all of the existing and to-be-installed facilities to accomplish the scope of Work and adhere to PG&E's Project Delivery System.
- 20.2.1 Preliminary Engineering: Contractor shall evaluate all deliverables previously generated as part of the Burney K2 Replacement Preliminary Engineering contained in Attachment 14 to determine its adequacy and compatibility with the requirements of this Specification.
- 20.2.2 Existing BCS documentation is in varying states of accuracy. PG&E makes no claim that any documentation is accurate. Contractor shall take this into account when performing the scope of Work.
- 20.2.3 Production\Detailed Engineering: Contractor shall generate specifications,



new and modified existing drawings, calculations, subcontract, purchase order documents, procedures and any other work required for the procurement, construction, and commissioning of the new turbine/compressor unit, unit auxiliary and station equipment.

20.2.3.1 Contractor shall develop project management and control documents including, but not limited to, project scope definition, CPM schedule plan, cost plan, project execution plan, and project procedures such as safety, QA/QC, document control, communications, WMDVBE subcontracting, and organization charts.

20.2.3.2 Contractor shall provide engineering, design, and the development of construction documents.

20.2.3.3 PG&E reserves the right to reject the package deliverables produced for the 30/60/90% or IFC stage if the content and/or quality of the package are, in PG&E's sole opinion, significantly substandard. Contractor shall not proceed to the next design stage or to construction until PG&E approval is obtained. Contractor shall not receive additional compensation to correct the deliverables nor will Contractor be granted schedule relief in the event substandard Work causes this issue.

20.2.4 Contractor shall plan for at least one monthly site PG&E visit during the engineering phase of the project to gather data and/or evaluate constructability issues on site with PG&E. These site visits can be either at the San Ramon office or at Burney Compressor Station. The design shall incorporate constructability and future maintenance considerations.

20.2.5 Contractor shall include construction representation at the 30/60/90% review meetings to provide input for constructability.

20.2.6 Contractor shall host a project kick-off meeting and three engineering review meetings at a PG&E facility. The three engineering review meetings shall be based upon the percentage complete of 30 percent, 60 percent and 90 percent of the engineering Work. PG&E, at its option, shall review Contractor's specifications, calculations, and drawings in progress during each of these meetings

20.2.7 Kick-Off Meeting and Site Visit: Contractor shall schedule a project kick-off meeting no later than two (2) weeks after receipt of PG&E's Notice to Proceed. Contractor shall tour Burney Compressor Station with PG&E as

part of the kick-off meeting. Minimum attendees for Contractor shall include Contractor's Project Manager, Contractor's Project Engineer, Contractor's Construction Manager, and lead discipline engineers. As a minimum, discussion topics and materials will include:

- 20.2.7.1 Presentation of the project team by Contractor and PG&E
- 20.2.7.2 Scope of Work as outlined in this Specification
- 20.2.7.3 Contractor and PG&E responsibilities as outlined in this Specification
- 20.2.7.4 Project objectives
- 20.2.7.5 Project goals
- 20.2.7.6 Communication strategies, including requirements set forth in this Specification
- 20.2.7.7 Roles and responsibilities for all team members
- 20.2.7.8 Client expectations

20.2.8 Thirty (30) Percent Complete Design Review Meeting: Note that preliminary versions of some of the documents listed below were completed in 2014. Contractor shall update these as necessary. Contractor shall provide all documents to PG&E in accordance with the PG&E Project Delivery System (PDS) for review no later than ten (10) working days before the date of the design review meeting. If so requested by Contractor, PG&E will return markups to Contractor within ten (10) working days after the date of the design review meeting. Information to be provided to PG&E by Contractor at the 30 percent complete design review meeting includes, but is not limited to, the following:

- 20.2.8.1 Noise Study
- 20.2.8.2 Geotechnical Investigation Report
- 20.2.8.3 Station Pressure Drop Study
- 20.2.8.4 Discharge Gas Cooler Study
- 20.2.8.5 Inlet Gas/Liquids Separation Study
- 20.2.8.6 Electrical Load Study
- 20.2.8.7 Document Management and Control Plan
- 20.2.8.8 Outline of subcontracting specifications
- 20.2.8.9 Master Drawing List, including affected pre-existing drawings
- 20.2.8.10 Milestone schedule which includes Phase I and Phase II activities
- 20.2.8.11 Draft cost plan which tracks expected costs directly related to the milestone schedule
- 20.2.8.12 Risk Register
- 20.2.8.13 Updated Design Basis Document

- 20.2.8.14 Preliminary Estimate of Phase II costs
- 20.2.8.15 3D CAD Model of the unit and station facilities
- 20.2.8.16 Site Plan and Layout
- 20.2.8.17 Draft Demolition Plan
- 20.2.8.18 Preliminary Pothole Plan / Sketch
- 20.2.8.19 Preliminary Equipment Layout
- 20.2.8.20 Preliminary Building Plans, Elevations, Sections and Details
- 20.2.8.21 Preliminary Foundation Plan, Sections and Details
- 20.2.8.22 Preliminary calculations for buildings
- 20.2.8.23 Draft Piping and Instrumentation Diagrams (P&IDs)
- 20.2.8.24 Draft Piping Plans
- 20.2.8.25 Draft Electrical Schematic
- 20.2.8.26 Draft Electrical One Line Drawings
- 20.2.8.27 Preliminary Control System Architecture Drawing
- 20.2.8.28 Draft control philosophy which includes overview, description of operations, I/O list of alarms, PLC I/O listing, and shutdowns
- 20.2.8.29 Draft Hazardous Area Classification
- 20.2.8.30 Calculations for Sizing Major Equipment and Gas Piping
- 20.2.8.31 Blow Down Volume and Time Calculations (Total Suction, Discharge and Unit Volumes)
- 20.2.8.32 Preliminary Material quantity takeoffs
- 20.2.8.33 Listing of long-lead material/equipment items\*
- 20.2.8.34 Equipment List including Instrument List/Index\*
- 20.2.8.35 Commodity Materials List – Major Piping and Valves\*
- 20.2.8.36 All other items necessary to convey general construction requirements.

\* Items to be listed in Bill of Materials (BOM)

20.2.9 Sixty (60) Percent Complete Design Review Meeting: A design review meeting shall be conducted by Contractor prior to final development of drawing details and shall illustrate the system layout and operation of the new units and existing station modifications. Contractor shall provide all documents to PG&E in accordance with the PDS for review no later than ten (10) working days before the date of the design review meeting. If so requested by Contractor, PG&E will return markups to Contractor within ten (10) working days after the date of the design review. Information to be provided to PG&E by Contractor at the 60 percent complete design review meeting includes, but is not limited to, updates to information, calculations and drawings provided during the 30 percent complete design review and the following:

- 20.2.9.1 Updated Site Plan
- 20.2.9.2 Site Grading, Road and Drainage
- 20.2.9.3 Soil Erosion and Sediment Control
- 20.2.9.4 Foundation Plan(s)
- 20.2.9.5 Site and Drainage Calculations
- 20.2.9.6 Steel Support and Foundation Calculations
- 20.2.9.7 Piping Plan and Section and Detail Drawings
- 20.2.9.8 Thermal/Mechanical Stress Analysis
- 20.2.9.9 Conduit Fill
- 20.2.9.10 Conduit Layouts
- 20.2.9.11 Electrical Details
- 20.2.9.12 Panel Layout Outlines
- 20.2.9.13 Lighting Drawings
- 20.2.9.14 Electrical Schematics
- 20.2.9.15 Connection Diagrams
- 20.2.9.16 Grounding Plot Plan
- 20.2.9.17 Station Control functions and hardware summary, see  
Section 14 of this Specification and Attachments 13 and 14.
- 20.2.9.18 Material Listing of Takeoffs and Bulk Items
- 20.2.9.19 Equipment and Instrument Listing by Number and  
Description
- 20.2.9.20 Outage and Clearance Plan
- 20.2.9.21 Cause and Effect Chart

20.2.10 Ninety (90) Percent Complete Design Review Meeting: This final drawing review meeting shall include the total drawing package necessary for construction. Design development and preparation of construction documents shall be 100 percent complete after incorporating the design review comments. Contractor shall provide all documents to PG&E for review no later than ten (10) working days before the date of the design review meeting. All drawings shall be detail checked and cross-discipline checked before submittal to PG&E. All construction documents shall be complete and suitable for construction bidding. If so requested by Contractor, PG&E will return markups to Contractor within ten (10) working days after the date of the design review meeting. Information to be provided to PG&E by Contractor at the 90 percent complete design review meeting includes, but is not limited to, updates to information, calculations and drawings provided during the 30 and 60 percent design review and the following:

- 20.2.10.1 All drawings
- 20.2.10.2 Piping Material Sheets

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- 20.2.10.3 Conduit Wire and Cable Schedule
  - 20.2.10.4 Hydrostatic Testing Scheme and Materials
  - 20.2.10.5 Completed Material Listing of Takeoffs and Bulk Items
  - 20.2.10.6 Purchase Order documentation for turbine/compressor and other long lead materials
  - 20.2.10.7 Equipment and Instrumentation Listing Complete with Manufacturer and Model Number
  - 20.2.10.8 Line Schedule
  - 20.2.10.9 Calibration Information
  - 20.2.10.10 Bulk Materials Lists
  - 20.2.10.11 Final construction plans
  - 20.2.10.12 Final subcontracting specifications
  - 20.2.10.13 Material specifications
  - 20.2.10.14 Stress Analyses
  - 20.2.10.15 Preliminary PLM Add/Edit Form
  - 20.2.10.16 Short circuit analysis, protective device coordination and arc flash analysis
  - 20.2.10.17 Other design calculations
  - 20.2.10.18 Copy of the unit PLC program printout
  - 20.2.10.19 Operating/maintenance documents including, but not limited to, safety and hazardous waste training documentation and welder certification
  - 20.2.10.20 All other documents necessary to itemize the requirements to accomplish PG&E's objective stated in Section 2 of this Specification and the Scope of Work (Attachment 1).
  - 20.2.10.21 Draft of detailed project schedule. No later than thirty (30) calendar days prior to planned construction commence date, Contractor shall submit the final detailed project schedule.
  - 20.2.10.22 Final cost plan and Phase II cost estimate
- 20.2.11 Contractor shall incorporate comments within five (5) working days of Contractor's receipt of PG&E's comments. Contractor shall then forward the completed drawings and data to PG&E for final review. PG&E will review the information and provide any comments to Contractor within ten (10) working days for incorporation into the final detailed engineering and design drawings and documents. Contractor shall incorporate these final comments and return the completed drawings and data to PG&E no later than five (5) working days following receipt of PG&E's final comments.

- 21.6.5 Placement of machinery and ancillary equipment
- 21.6.6 Alignment checks
- 21.6.7 Cleanliness check of lube oil
- 21.6.8 Ensure any required tools and startup spares are on site
- 21.6.9 Ensure necessary operation, maintenance, and repair manuals and start-up information are on site
- 21.7 From the beginning of purchasing activities, Contractor shall track procurement activities and shall provide weekly summary status reports of activity to PG&E. In addition, Contractor shall compile vendor data including relevant vendor manuals, data sheets, operation and maintenance manuals, and inspection records for incorporation in the project manual and documentation.
- 21.8 Contractor shall be responsible for quality control with the supplier, on-site inspection of material received, and for ensuring that all material procured satisfies the requirements of PG&E Standards and the U.S. Department of Transportation 49 CFR Part 192.
- 21.9 To assure safety, reliability, and affordability of procured material, Contractor shall comply with PG&E's material quality requirements stated in General Conditions Article 3.4.
- 21.10 For all Contractor-procured material, prior to commencing Work, Contractor shall provide all material certifications and testing documentation to the PG&E Project Manager.
- 21.11 Contractor shall identify equipment inspection and hold points within the milestone schedule.

## **22 CONSTRUCTION REQUIREMENTS**

### **22.1 General requirements:**

- 22.1.1 PG&E's top priority is safety. This includes taking all necessary precautions and actions to ensure the safety of the public, and all PG&E, Contractor and Subcontractor employees working at the Job Site. See Sections 23, 24 and 25 of this Specification for safety, environmental, and Hazmat requirement prior to construction.
- 22.1.2 Conduct Asset Management Awareness and Training: Before construction work begins, all Contractor and subcontractor personnel performing work on PG&E gas asset families shall view the Gas Safety Excellence video

message located on YouTube at:

<https://www.youtube.com/watch?v=Fp9lf28800o>.

- 22.1.3 Notice to Proceed (NTP). Contractor shall not commence construction nor mobilize equipment and personnel to the site until authorized to do so in a written Notice to Proceed by PG&E. The Notice to Proceed will contain final permits and any special requirements for the construction. Contractor shall provide written notice to PG&E within 24 hours of issuance of the Notice to Proceed of any conflicts impacting construction. If Contractor fails to provide the required notice, the Contractor shall not be entitled to a change order for compliance with more stringent, additional or conflicting terms and conditions.
- 22.1.4 Contractor shall perform the Work in accordance with Gas Standards and Specifications Manual TD-4950M (Update #66). Selected standards and specifications are attached hereto for Contractor's reference (Attachments 10 and 11). Contractor shall submit an RFI to PG&E Construction Manager if the Contractor deems it necessary to be provided with additional copies or latest versions of standards and specifications as required for completion of the objective for the Work
- 22.1.5 Contractor shall provide the services of a survey company licensed in the State of California to perform construction surveys as required to perform the Work. The costs for this Work shall be included in Contractor's price proposal. Contractor shall submit survey maps and As-Built drawings with the Project Documentation.
- 22.1.6 Contractor shall not bring any individual onto the Work site, other than Contractor's employees, unless authorized, in writing, by PG&E.
- 22.1.7 Contractor shall place an emphasis on housekeeping during construction. PG&E reserves the right to require that Contractor hire a cleaning service to maintain the Work site in a clean and orderly condition.
- 22.1.8 Contractor shall employ methods to maximize recycling and to minimize waste and carbon footprint during construction.
- 22.1.9 For "hot work" Contractor shall submit a permit for hot Work to PG&E Construction Manager for approval (see Attachment 10, "PG&E Hot Work Permit (09/2005)")
- 22.1.10 Contractor will ensure that Contractor and subcontractor personnel use tools and equipment that are designed for Work and manufactured to a



quality that equals or exceeds industry standards.

- 22.1.11 Contractor shall calibrate and maintain tools and equipment in accordance with manufacturer requirements.
  - 22.1.11.1 Submit to PG&E CM the calibration and maintenance records for each tool and piece of equipment on electronic forms or written documents that conform to MSA requirements.
  - 22.1.11.2 PG&E will provide a list of approved tools if requested by Contractor. In the event that the make or model of tool(s) is not pre-approved by PG&E, submit manufacturer data sheets to PG&E CM for approval.
  - 22.1.11.3 PG&E approval of tools and equipment shall be obtained in advance of Work
- 22.1.12 English shall be designated as the official language of PG&E for the purpose of stating the requirements of the Contract Documents and relaying verbal directives at Work site. Contractor shall accommodate its employees and subcontractor personnel who use a language other than the English language, including but not limited to:
  - 22.1.12.1 Providing information orally to individuals in the course of conducting tailboards, safety meetings, and communicating with the public;
  - 22.1.12.2 Ensuring compliance with the site-specific safety plan and Work plans; and
  - 22.1.12.3 Complying with local, state, and federal laws regarding personnel who use a language other than the English language.
- 22.1.13 Contractor shall retain and make available at least one (1) copy of each record at the project site to enable inspection, review, and audits by PG&E at any time.
  - 22.1.13.1 Submit information after award of contract in accordance with General Conditions (Article 8.3).
  - 22.1.13.2 Maintain proof of insurance coverage in accordance with General Conditions (Article 20).
  - 22.1.13.3 Maintain As-Built drawings in accordance with Section 22.14.
  - 22.1.13.4 Retain copies of permits and regulatory requirements at the required site location(s) for the duration of Work.
  - 22.1.13.5 Maintain a public contact log for the duration of the project.
  - 22.1.13.6 Public contact log shall provide the date, time, and identification of the caller, the nature of the problem, and the

action taken and date resolved.

22.1.13.7 Provide copies of the public contact log to PG&E CM at the weekly construction meetings and with other project documentation.

22.1.13.8 Maintain equipment maintenance records.

22.1.13.9 Maintain calibration records for tools and testing equipment.

22.1.14 Contractor shall be responsible for coordinating with PG&E to determine all site-specific conditions including, but not limited to, construction personnel parking, sanitary and rest facilities, laydown and storage areas and coordination with other activities at the site.

## 22.2 Construction Worker Qualifications and Training.

22.2.1 Contractor shall train personnel and provide documentation for Operator Qualifications (OQ) in accordance with the document attached hereto (see Attachment 10, "TD-4008S Operator Qualification Program Requirements" and "TD-4008S, Attachment 1: Covered Task List").

22.2.2 For work covered by the Department of Transportation Operation Qualification Guidelines listed in 49 CFR 192 and 195 Contractor and Subcontractor(s) must be qualified to perform such Work in accordance with General Conditions, Article 12.12.

22.2.3 Prior to commencing any Work on site, Contractor shall present Hazard Communication training to Contractor's and subcontractor's personnel in accordance with Section 24.1.1 this Specification . Such training shall be in compliance with all applicable laws, rules and regulations including, but not limited to, OSHA, and adequate to prepare such personnel for the issues related to the possible hazards of constructing and commissioning a new compressor station as well as the specific hazards associated with the Work

22.2.4 Contractor shall ensure that each welder is tested and qualified for the type of pipe and procedure provided to Contractor with the applicable CWA according to the PG&E Gas Standard and in accordance with API Standard 1104 prior to performing the welding work.

22.2.4.1 Contractor shall submit the names of qualified welders to the PG&E Construction Manager for verification and documentation for the pipe specified for this project within the required elapsed time for validity of the qualification.

22.2.4.2 PG&E will perform testing of welders not previously qualified.

Contractor shall contact PG&E Construction Manager no later than fourteen (14) days prior to the date on which welding qualification testing is to be scheduled.

- 22.2.4.3 As part of the qualification testing, each welder shall be required to make a weld using pipe material of the same specifications as the pipeline specified, and using the same electrodes specified for the pipeline per approved welding procedure. Each welder shall make the qualification test weld using the same welding technique, welding current, and travel speed that he or she will use if permitted to work on the subject pipeline.
- 22.2.4.4 Contractor shall retain, at the job site at all times, copies of PG&E welder certification together with documents sufficient to identify each welder as the individual certified. Failure to produce such certification and documentation may result in PG&E requesting that the welder be removed from the Work and any welds performed by such individual replaced by Contractor at no additional cost to PG&E.
- 22.2.4.5 Labor or standby cost for welders during tests and while waiting for test results shall be at no additional cost to PG&E.

## 22.3 Field Office and Maintenance:

- 22.3.1 PG&E will provide the on-site construction yard for use by Contractor. For purpose of this proposal, Contractor shall assume that the construction yard shall be as shown in Attachment 6.
- 22.3.2 In addition to other requirements stated in this Specification and General Conditions to this Contract, during the term of this Contract, Contractor shall provide tools, barriers, space heaters, potable and non-potable water, self-contained toilets, shelter, and cleaning facilities as required by applicable Federal, State and local rules, laws and regulations for performance of the Work and the safety of Contractor's and subcontractor's personnel and equipment storage. PG&E's restrooms and break areas will not be available for Contractor's use and Contractor shall be responsible for providing adequate restroom/break facilities/areas for its employees or subcontractors.
- 22.3.3 Temporary Electric Power - Contractor shall provide necessary electrical power for tools and equipment. PG&E can make 115VAC service at 60 amps available for Contractor's office trailer. PG&E will make no charge for electrical power used by Contractor. PG&E shall not be responsible for

damage to Contractor's equipment or computers due to unplanned outages, power surges or dips.

22.3.4 PG&E will provide two (2) telephone lines at Contractors field office trailer.

22.3.5 Contractor shall provide, construct, and maintain a field office for three PG&E Construction Management personnel. Contractor shall also provide sufficient space with tables and chairs to hold PG&E weekly project meetings with Contractor and subcontractors as necessary. Office and supporting facilities shall be considered to be a portion of the requirements for maintaining a project construction yard. The PG&E Construction Manager will designate the office location. The office shall have electricity, heating, ventilation, air conditioning, drinking water, sanitation, waste disposal, and amenities.

22.4 Material Receipt and Storage:

22.4.1 Contractor shall receive and inventory all Work materials, equipment and tools shipped to the project site, verify their suitability versus the applicable drawings, and inspect for damage. Contractor shall promptly return any damaged or incorrect parts and new or correct material shall be ordered at no additional cost to PG&E. Contractor shall be responsible for security and safeguarding of all Work materials, equipment and tools stored on-site.

22.4.2 All material must be shipped with material certifications and/or testing documents. Contractor shall retain such documentation at the jobsite and available to the PG&E Project Manager during the performance of Work.

22.4.3 Contractor shall provide labor necessary at the Burney station to receive, unload and properly store all materials of construction. PG&E will provide inside warehousing only for the most sensitive materials of construction such as electronics and instrumentation. PG&E will designate outside areas at the plant site for storage of construction materials. Contractor shall ensure that it and its subcontractors are in full compliance with all applicable laws, regulations, and ordinances governing the storage of hazardous materials including, but not limited to, the Uniform Fire Code.

22.5 Subsurface Structures and Conditions:

- 22.5.1 Contractor shall confirm the locations of subsurface structures as required to complete the Work described herein. Potholing shall be performed as the primary methods for confirming location(s) of subsurface structures. Excavation and potholing Work shall be performed in accordance with the attached documents (Attachment 10, “Potholing Scope of Work Specification” and “Potholing Data Sheet”).
- 22.5.1.1 There may be unknown buried structures in the area that are not shown on the Contract Drawings. Contractor shall exercise caution when performing Work.
- 22.5.1.2 Contractor shall assume all risk when excavating near existing PG&E natural gas pipelines and underground electrical facilities, buried structures, and utilities as shown on the PG&E as-built drawings. Contractor shall repair any damages to substructures caused by the Work at no additional cost to PG&E
- 22.5.1.3 Submit a work plan for utility and buried structure investigations; coordinate the Work with the subsurface investigations which will use GPR, potholing, and other means as appropriate. Contractor shall address coordination of Work with the subsurface investigations in the site-specific safety plan.
- 22.5.1.4 Submit pothole data in Unifier as described by the document attached hereto (see Attachment 10, “Potholing Data Sheet”).
- 22.5.1.5 PG&E anticipates that the existing grade or top of ground shown on the PG&E as-built drawings may vary up to one (1) vertical foot compared to actual grade in the field. As such, costs associated with a one foot variation in grade shall be included as a part of Contractor’s cost proposal.
- 22.5.1.6 Contractor shall notify the PG&E CM immediately in the event that unforeseen structures or changed conditions are discovered and submit a request for information (RFI) on Unifier. Describe the condition encountered, recommended solution, associated cost change, and impact to the schedule.
- 22.5.2 Contractor shall perform subsurface investigations for the purpose of characterizing groundwater conditions and shall perform this work prior to planning pipeline fabrication and installation. Potholing shall be performed as one method for confirming groundwater conditions.
- 22.5.2.1 Regardless of the groundwater assessments described herein, PG&E anticipates that open excavations may require minor (incidental) dewatering operations to maintain a firm working

surface and preserve the integrity of excavated surfaces. As such, costs associated with small, attended pumping (dewatering) systems shall be included as a part of Contractor's cost proposal. For the purpose of the bid proposal, minor dewatering operations shall include, but shall not be limited to, a minimum of two (2) non-clog centrifugal pumps in addition to appurtenant hoses, valves, fuel, generators, and associated equipment. Each pump shall be capable of lifting 10 to 100 gallons per minute at 20 feet to 50 feet of total dynamic head (TDH). Contractor shall comply with the SWPPP when discharging pumped groundwater.

22.5.2.2 Contractor shall notify the PG&E Construction Manager immediately in the event that groundwater is encountered in open excavations at depths or flow rates that exceed anticipated groundwater conditions.

22.5.2.3 In all situations, Contractor will ensure that bell-holes and trench bottoms are free of water. Provide firm footing for workers in the bell-holes and trenches.

22.5.3 Contractor shall perform subsurface investigations for the purpose of characterizing subsurface soil conditions and shall perform this Work prior to planning pipeline fabrication and installation along each reach of the pipeline alignment as described herein. Potholing shall be performed as one method for confirming subsurface soil conditions.

22.5.3.1 Contractor shall notify PG&E Construction Manager immediately in the event that subsurface conditions are encountered in open excavations that differ from the anticipated subsurface conditions.

## 22.6 Construction Permits and Working Hours:

22.6.1 Except for the permits to be obtained from the Shasta County Air Quality Management District by PG&E, Contractor shall be responsible for all permitting required for the scope of Work. Contractor shall determine requirements and file all permit applications. Contractor shall be responsible for the engineering of all site plans, buildings, and soil erosion and sediment control drawings necessary to comply with Federal, State and local agency requirements and comments, including revisions. Contractor shall provide engineering coordination with permit agencies and provide appropriate revisions to the permit drawings and specifications.

22.6.2 The design of the facilities, in addition to providing safe and reliable service in complying with or exceeding all applicable regulations, must provide a design which adheres to all permit conditions. Contractor shall retain copies of permits and regulatory requirements at the Contractor's engineering office and at the site construction trailer for the duration of the Work.

22.6.3 For the purpose of the cost proposal, Contractor shall assume the construction Work may be performed at the following times of day: 6:00 a.m. to 6:00 p.m., Monday through Saturday.

22.6.4 Final work hours may be provided as conditions of the final approved permit(s). Provide notifications to as required by the final approved permits. For the purpose of the price proposal, Contractor shall assume that working hours are limited to ten (10) hours per day and six (6) days per week Monday through Saturday. Exceptions to the 6/10 work hour limitation can only be granted by Director of Gas Transmission Construction Management.

22.7 Shoring, Excavation, Backfill, and Compaction:

22.7.1 Shoring: Contractor shall secure the services of a professional engineer registered in the State of California to design shoring and bracing for open excavations as required to support the Work in accordance with federal, state and local laws, rules, and regulations. The costs for this Work shall be included in Contractor's price proposal.

22.7.2 Contractor shall furnish and install shoring as required by CAL/OSHA regulations and any additional shoring and bracing as needed to support any excavation in a safe and stable condition. All shoring shall be removed by Contractor after use.

22.7.3 Excavation: Excavation in the Station shall be by "hand-dig or vacuum truck unless other means are authorized by the PG&E Construction manager.

22.7.4 Contractor shall perform all Work necessary for the control and disposal of all surface and subterranean water to the extent and for such time as is necessary to keep water from interfering with the progress, efficiency, and quality of Work. If inclement weather or the presence of groundwater causes any excavation to fail or fill with water, it is Contractor's responsibility to do whatever is necessary to promptly restore the



excavation to an acceptable condition and the facilities to their appropriate configuration without any additional cost to PG&E.

- 22.7.5 Unless otherwise specified on plans and/or permits, Contractor shall ensure that the depth of excavation provides for a minimum of forty-eight (48) inches of radial cover on the pipes, measured from finished grade.
- 22.7.6 Contractor shall ensure that the width of trenches is at least twelve (12) inches greater than the outside diameter of the pipe being installed so that 1) all the facilities may be installed without damage, and 2) sufficient space is provided for the placement and compaction of backfill material.
- 22.7.7 Contractor shall ensure that the bottoms of excavations are level, flat, without surface irregularities, and cleared of rocks or other debris. Trench elevation changes shall be by gradual transition and not by abrupt drops. At vertical angles, Contractor shall ensure that the trench bottom is formed, relieved and padded to fit the curvature of the pipeline.
- 22.7.8 Contractor shall place a minimum of six (6) inches of sand padding in the bottom of all excavations for placement of facilities. Contractor shall ensure that padding and padding material are in accordance with Paragraph 22.7.9.1.
- 22.7.9 Backfill: Contractor shall secure the approval of PG&E before any backfilling is done. No backfilling shall be done until the pipelines and appurtenances have been inspected and As-Built drawings reviewed and accepted by PG&E. If any backfilling is done without said approval, PG&E shall have the right to require removal of the backfill for examination. The cost of such removal shall be borne by Contractor. Approval by PG&E does not relieve Contractor of the responsibility to perform and warrant the Work in accordance with this Contract.
- 22.7.9.1 Padding: Trenches shall be filled with padding material to at least twelve (12) inches above the top of the pipeline. The pipe shall be supported by a complete filling of the area under the pipe. This may be achieved by filling to the spring line and flooding the fill material. Contractor shall ensure that all padding material is in accordance with PG&E EMS 4123 (see Attachment 10, "EMS 4123, backfill Sand").
- 22.7.9.2 Contractor shall ensure that the remainder of the excavation is filled immediately after the padding material has been placed on top of the pipeline. Contractor shall exercise necessary

- precautions to prevent any large or sharp rocks from getting in the backfill material.
- 22.7.9.3 The remainder of the excavation may be filled with native material. Selected backfill or imported backfill, when required for filling excavations, shall be considered a normal part of Work at no additional cost to PG&E.
- 22.7.9.4 Contractor shall protect electrolysis test station assembly and wires during backfilling. If electrolysis test station leads are backfilled, they must be dug out at Contractor's expense.
- 22.7.10 Compaction: Compaction of all padding and trench fill by Contractor will be required throughout the project. Compaction shall be performed in accordance with construction drawings and all governmental rules, regulations, ordinances, and codes; and jurisdictional agency permits.
- 22.7.10.1 Contractor shall retain the services of a compaction company for the performance of the compaction tests. Contractor shall coordinate with the compaction-testing contractor including, but not limited to, leaving some holes open during the backfill and compaction process to enable testing of specific lifts and Contractor returning to complete compaction and backfilling. Contractor shall perform compaction tests at each open excavation including, but not limited to, bell hole, sniff hole, valve pit, and open excavation. The number of compaction tests at a given location shall be defined as one (1) test at existing ground surface in addition to one (1) test for each vertical linear foot of excavated depth.
- 22.7.10.2 A compaction log shall be kept on a set of drawings in Contractor's office for review and shall be updated daily and be available to PG&E and/or the controlling agency, upon request.
- 22.7.10.3 Upon completion of all compaction tests, Contractor shall provide the written, certified compaction test reports to the PG&E on-site representative. The location and depth must be recorded on the report at the time of the test.
- 22.7.10.4 Backfill shall be thoroughly compacted to no less than 90 percent of relative maximum compaction. The level of compaction shall be determined by California Test Methods 216 or 231, or the most current editions ASTM D1557 and ASTM D6938-10.
- 22.7.10.5 At locations where native soil is allowed for backfilling, Contractor shall compact excavations to required density by jetting or other approved means. In jetting, excavations shall be

backfilled in lifts no greater than eighteen (18) inches, jetted with water until material is soaked, and compact by tamping.

22.8 Gas Piping Fabrication:

22.8.1 Contractor shall cut, align, and join pipe and appurtenances. Work shall conform to PG&E's standards for the specified pipe and the most current edition of API 1104 "Welding of Pipelines and Related Facilities."

22.8.2 Contractor shall ensure that all angles, either horizontal or vertical, and roping, conform to radii shown on Construction Drawings and are made in accordance with PG&E Gas Standard A-36.

22.8.3 In no event will Contractor use miter welds for any angle in the construction of pipeline.

22.8.4 In the event Contractor recommends the use of field bends for any angles in the construction of the pipeline, Contractor shall submit the location and angle of such to the PG&E on-site representative. Contractor shall not proceed with such field bends until authorized by PG&E. In the event Contractor receives such authorization from PG&E, Contractor shall proceed in accordance with PG&E Gas Standard A-36.

22.8.5 All welding elbows shall be made from forty-five (45) or ninety- (90) degree segments. When angles are formed by segments of welding elbows, the angles shall be torch cut with a beveling machine, and ground. Segments shall be a minimum of two (2) inches from top-of-bevel to top-of-bevel at the throat of the segment. Segmenting of fittings shall be in accordance with PG&E Gas Standard B-25.

22.8.6 PG&E will verify all angles for tie-in pieces.

22.8.7 Contractor shall re-cut and bevel all pipe ends as may be necessary to maintain correct alignment of the pipeline. Contractor shall make all pipe bevels with a beveling machine; hand beveling will not be permitted. All field bevels shall be cut and finished at right angles to the longitudinal axis of the pipe evenly and without rough surfaces. A power-driven grinder and/or wire buffer shall be used to finish the cut to a bevel and face identical to the original.

22.9 Welding Gas Piping, Valves and Fittings:

22.9.1 Contractor shall maintain, on the welding rig being used to perform any gas piping, valve or fitting welding, a copy of the applicable welding

procedure with the applicable Project Specific Conditions, wind meter, temp stick, water-proof marker, and an amp gauge.

- 22.9.2 Contractor's welders must be certified in accordance with Paragraph 8.2 of this Specification prior to performing any Work under this Contract. Contractor shall ensure that all field joints in the pipeline are welded, including fittings and accessories, according to the applicable PG&E Gas Standard, and that all welding equals or exceeds the requirements of API Standard 1104, most current edition, "A Standard for Field Welding of Pipelines."
- 22.9.3 Contractor shall ensure that all welds are marked with a waterproof crayon by the welders, with the numbers assigned to them by PG&E. Should any welder leave the job, his/her number will not be duplicated. No punch or steel stenciling will be permitted.
- 22.9.4 Contractor shall ensure that the pipe is properly aligned with ends square with the pipe axis prior to welding. No misalignment of the pipe will be allowed. In no event will Contractor use back-welding to compensate for poor alignment of the main line pipe.
- 22.9.5 Contractor shall ensure that no welding electrodes or ground connections are permitted to arc on the pipeline except in the joint groove to be welded. Any such arc burn shall be considered a defect and shall be removed.
- 22.9.6 Contractor shall ensure that welding is not done when the weather conditions are unfit or would impair the quality of the completed weld, as determined by PG&E. When necessary, Contractor shall provide and use a cover of a type that will give adequate protection to the welder, and the weld, from the weather. Contractor shall furnish and install anchored windshields to protect welding when the winds exceed fifteen (15) miles per hour or as required by the PG&E Construction Manager.
- 22.9.7 Contractor shall provide a fully charged fire extinguisher for immediate availability at each location where welding or cutting is to be done. C
- 22.9.8 Contractor shall comply with United States Department of Forestry rules for fire control.
- 22.9.9 Contractor shall utilize shields or screens, to be approved by PG&E, to protect pedestrians, residents and others from exposure to ultraviolet light resulting from arc welding.

- 22.9.10 Contractor shall not throw waste electrodes and/or electrode stubs into the trench, pipe, or backfill material.
- 22.9.11 PG&E will visually inspect and/or radiographically test all welds according to PG&E Gas Standard TD-4160P-60, Weld Inspection”, to ensure that the standard of acceptability for all welding equals or exceeds the requirements of API Standard 1104, 18th Edition, “A Standard for Field Welding of Pipelines.” All radiographic films shall be the property of PG&E and all documents required by API 1104 and all reports required by Gas Standard TD-4160P shall be submitted to PG&E.
- 22.9.12 Each Work day Contractor’s Construction Superintendent will advise the PG&E on-site Lead Inspector of when and how many x-rays will need to be performed the following day.
- 22.9.12.1 In the event Contractor fails to meet Contractor’s schedule for x-rays and if the x-ray contractor is required to wait two (2) hours or more for Contractor to be ready for x-ray, then Contractor shall pay for the x-ray contractor stand-by time which is in excess of two (2) hours. PG&E will not be invoiced for the cost of any Work delay caused by any inadequacy in Contractor’s x-ray schedule provided to PG&E the previous business day.
- 22.9.12.2 Contractor shall pay the cost of radiographic testing of welds that fail initial testing by PG&E.
- 22.9.12.3 The interpretation of the radiographic films shall be evaluated by PG&E on the basis of API 1104, 18th Edition. Final weld acceptance or rejection will be by PG&E; however, such acceptance or rejection shall not relieve Contractor of the sole responsibility to perform and warrant the Work in accordance with this Contract.
- 22.9.12.4 Contractor shall provide safe and convenient access to each weld for radiographic examination.
- 22.9.12.5 Contractor shall re-weld each weld which is not satisfactory according to the x-ray examination. No more than one attempt to repair a failed weld will be allowed. If the failed weld is not satisfactorily repaired at the first attempt, it must be removed from the pipeline. Contractor shall not be allowed schedule relief to re-weld any such failed weld. Contractor shall re-weld the failed weld at no additional cost to PG&E.

- 22.9.12.6 When the results of welding inspections show a welder is not producing satisfactory field welds, he or she will not be permitted to continue welding on the pipeline. At PG&E's request, Contractor shall remove that welder from Work performed under this Contract.
- 22.9.12.7 At PG&E's expense, PG&E reserves the right to employ any other nondestructive method of testing, such as radiographic examining, magnetic particle testing, ultrasonic testing and/or other acceptable methods.
- 22.9.12.8 Contractor shall provide a weekly report of failed welds.

22.10 Coating Gas Piping, Valves and Fittings:

- 22.10.1 Contractor shall not burn wrap off of pipe. Wrap shall either be cut, chipped, scraped or peeled. Torch cleaning of remaining residue is only appropriate preparatory to a welding operation.
- 22.10.2 When asbestos is thought to be present in existing pipe wrap, Contractor shall coordinate with the PG&E on-site representative to obtain and test a sample of the pipe wrap. Contractor shall provide for time to obtain results of test of pipe wrap in Contractor's project schedule.
- 22.10.3 Contractor shall apply protective coatings to all metallic field joints, fittings, and any other bare metal surfaces, and shall repair coatings on existing pipe and appurtenances where protective coating is damaged or has been removed during Work connected with this project. The protective coatings shall be applied in accordance with PG&E Gas Standard E-25, PG&E Gas Standard E-30, and PG&E Gas Standard E-35. The field coating on bare pipe and/or damaged wrap shall be considered a normal part of the pipeline installation, and shall be the sole responsibility of Contractor.
- 22.10.4 Prior to placement in the trench, all portions of the coated pipe, both field and plant wrapping, shall be inspected by Contractor with a PG&E-approved holiday detector ("Jeep"). The holiday detector shall be provided by Contractor. Contractor will have manufacturer's instructions and calibration data for each holiday detector on site at the location where the equipment is being used. Contractor will submit verification of proper calibration prior to start of project, will test the holiday detector to ensure accurate function prior to each use, and will submit documentation of each such test to the PG&E on-site

representative. For fusion-bonded epoxy (FBE)-coated pipe, the voltage shall be 125 volts per mil of coating thickness.

- 22.10.5 Contractor shall ensure that a PG&E representative is present during the holiday detection process. Any pipe that does not have a minimal cover at the end of the day shall be re-jointed by Contractor prior to backfilling the following day.
- 22.10.6 Contractor shall furnish and apply protective coating to pipe in accordance with PG&E standards (see Attachment 11, “E-30, Standard, Selecting and Applying Coatings for Exposed Gas Piping” and “E-35, Standard, Selecting and Applying Coatings for Buried Transmission Pipe”) including, but not limited to, training of employees in the method of application. Specific coating selections will be shown on the Issued for Construction Drawings.

22.11 Gas Piping Tie-in:

- 22.11.1 PG&E anticipates that PG&E GC will perform all tie-ins to the operating natural gas transmission pipeline. PG&E will provide Contractor the scope of work for tie-in. Contractor shall provide labor and equipment as requested by PG&E to support the tie-in performed by GC.
- 22.11.2 PG&E will schedule a tie-in meeting with Contractor approximately two (2) weeks prior to the anticipated date of tie-in to properly schedule GC’s participation to meet project milestone and completion dates. If so requested by the PG&E Project Manager, Contractor will meet with PG&E again, closer to the date of actual tie-in, to finalize Work scope and schedule.
- 22.11.3 Contractor shall submit a tie-in work plan that meets the requirements for PG&E tie-in procedures (see Attachment 11, “TD-4100P-01, Hot and Cold Work Methods for Natural Gas Transmission Pipeline Shutdown and Tie-in”, “TD-4100P-10 Gas Clearance Procedures for Facilities Operating Over 60 PSIG” and “TD-4100B-003, Lockout Tag Out Procedure Requirements”) Indicate sniff -hole locations. Coordinate with PG&E Clearance Supervisor. Contractor shall attend clearance meetings to ensure tie-in activities are identified and assigned to PG&E and Contractor personnel.
- 22.11.4 At tie-in locations, Contractor shall excavate a bell hole for performance of tie-in operations. The minimum dimensions of the bell



hole working space shall be three (3) feet wide on each side of the pipeline, by six (6) feet long from each side of the tie-in weld location, and eighteen (18) inches below the bottom of the pipeline.

- 22.11.5 For each tie-in, Contractor shall excavate, wrap, backfill and compact sniff holes at each gas source location.
- 22.11.6 Contractor shall excavate trenches, bell holes and sniff holes so that adequate room is provided for the performance of all Work and shoring and/or sloping as required within CAL/OSHA safety standards.
- 22.11.7 PG&E will verify all angles for tie-in pieces.
- 22.11.8 Contractor shall fabricate, coat, and test the tie-in pieces as specified in PG&E Requirements of this Specification and Attachment 11 (“E-25, Standard, Field Wrapping with Cold-Applied Tape “, “E-30, Standard, Selecting and Applying Coatings for Exposed Gas Piping”, and “E-35, Standard, Selecting and Applying Coatings for Buried Transmission Pipe”) and as shown on the Construction Drawings.
  - 22.11.8.1 Contractor shall excavate and restore tie-in and sniff holes. Provide all labor, equipment, tools, material, and supplies to support including, but not limited to, compressors, air movers, and other assistance to PG&E during tie-in as directed by the PG&E Construction Manager.
  - 22.11.8.2 Contractor shall notify PG&E Construction Manager no later than one-(1) week prior to tie-in.

## 22.12 Fluid Storage Tanks:

- 22.12.1 Fluid storage tanks are required for hydrotesting and dewatering. Contractor shall the comply with the following requirements:
  - 22.12.1.1 Contractor shall include costs for furnishing and installing fluid storage tanks in its proposal price and shall not assume that PG&E will provide fluid storage tanks unless informed by PG&E in writing prior to preparation of Contractor’s proposal.
  - 22.12.1.2 In the event that groundwater is found to be contaminated, PG&E will dispose of water pumped from open excavations.

- 22.12.2 In the event that PG&E provides fluid storage tanks, PG&E will provide labor, materials, and equipment to complete the following work:
  - 22.12.2.1 Provide and install approximately 4 feet of braided flexible hose to couple tanks to each other
  - 22.12.2.2 Provide and install secondary containment skirt around perimeter of each tank; and
  - 22.12.2.3 Clean tanks and equipment in the event that hazardous material is present.
- 22.12.3 To obtain fluid storage tanks Contractor shall submit a PG&E “Tank Request/Return Form” (see Attachment 10, “Frac Tank Request/Return Form”).
  - 22.12.3.1 In the event that PG&E does not provide fluid storage tanks, Contractor shall provide braided flexible hose and containment skirts (as described in the subparagraph, above).
  - 22.12.3.2 Contractor shall coordinate the use of tanks and provide transportation to and from job site.
  - 22.12.3.3 Discharge and manifold piping shall be welded or flanged. Do not weld to tanks.
  - 22.12.3.4 For tanks used for cleaning or pipeline retirement fluids: Support and restrain discharge piping by methods that may include, but are not limited to, straps that are fastened to the fluid storage tanks, and configure pipe discharges over the top of the tank.
  - 22.12.3.5 For tanks used for dewatering after a Hydrotest: discharge piping can be connected to valve at bottom of tank.
  - 22.12.3.6 Fill pump(s) and associated hoses shall have mechanical couplings that are secured. Cam locks are not permissible. Piping connections shall be welded or flanged.
  - 22.12.3.7 Contractor may submit threaded connections for discharge or tank piping less than 2 inches in diameter to PG&E CM for approval, however, no such approval shall be guaranteed.
  - 22.12.3.8 Clean tanks and equipment that were used for hydrotest water storage, with the exception of hazardous material.
  - 22.12.3.9 Tank cleaning will be confirmed by PG&E CM.

22.13 Strength Test Pressure Testing and Reporting:

- 22.13.1 Contractor shall perform hydrostatic test(s) or “hydro-test(s)” of installed pipelines, stations, valves, and appurtenances as described below.
- 22.13.2 Contractor shall provide storage tanks, pumps and all necessary hard piping required to perform the test. All materials and equipment utilized by Contractor for the pressure test including, but not limited to, hoses, pumps, and meters, shall be clean and in a condition to avoid contamination of hydro-test water.
- 22.13.3 Contractor shall acquire the water source and discharge location for the hydro-test water. PG&E will test the hydro-test water prior to and after the hydro-test. Contractor shall not dispose of the hydro-test water until authorized to do so by PG&E.
- 22.13.4 Contractor shall provide a detailed test procedure to the PG&E Project Manager no later than fourteen (14) calendar days prior to the planned test. Contractor’s test procedure must be approved by PG&E prior to Contractor commencing Work; however, such approval shall not relieve Contractor of the responsibility to perform and warrant the Work as provided herein.
- 22.13.5 The testing requirements are established in the Strength Test Pressure Report (STPR). Contractor shall submit hydro-test procedure to PG&E Construction Manager for approval. Upon receipt of Contractor’s test procedure, PG&E will complete Part I of the STPR and provide the partially completed form to Contractor.
- 22.13.6 Contractor’s hydro-test procedure shall include all procedures required by PG&E Gas Standard A-34 (see Attachment 11, “A-34, Standard, Piping Design and Test Requirements”) including, but not limited to, each of the following:
  - 22.13.6.1 Names and qualifications of subcontractors, if any.
  - 22.13.6.2 Contractor’s schedule and process to accomplish the pressure testing of the installed pipe.
  - 22.13.6.3 Contractor’s planned means to acquire, store, filter and dispose of the test water, if applicable.
  - 22.13.6.4 Contractor shall ensure that all pipe to be tested is firmly supported prior to filling with water. Maximum span lengths between supports shall be fourteen (14) feet, and the maximum cantilevered span shall be ten (10) feet.

- 22.13.6.5 Test pressure shall be as shown on approved STPR and, unless otherwise directed by PG&E, held for a minimum period of eight (8) hours.
- 22.13.6.6 Hydrotest plan shall include calculations that demonstrate that the configuration of dewatering system storage, conveyance, and discharge systems are sufficient to complete the Work.
- 22.13.7 Contractor shall supply all required test instruments including, but not limited to, dead weight testers at both ends of the hydro test section, spring gauge, temperature and pressure recorders with charts, recording gauge and test chart. Contractor shall calibrate all instruments prior to the test and provide the calibration certifications to the PG&E on-site representative prior to conducting the test.
- 22.13.8 Contractor shall complete Part II of the STPR, Part I of which was previously completed by Contractor's Project Engineer and reviewed by PG&E, and provide the test charts and completed STPR to the PG&E on-site representative no later than two (2) hours following completion of the test.
- 22.13.9 Test records shall be signed and dated by the PG&E Representative upon witnessing and verifying said test. Contractor shall submit for approval sketches, charts, logs, dimensions, and appurtenant information in conjunction with each s STPR. Upon completion of any test, all records shall become the property of PG&E.
- 22.13.10 Contractor shall withdraw and discharge water for the hydro tests from the location(s) that will be designated by PG&E prior to the start of construction. Contractor shall handle and discharge hydro test water in accordance with the SWPPP.
- 22.13.11 Contractor shall not proceed with any pressure test using anything other than water unless specifically authorized, in writing, by PG&E. If PG&E authorizes any portion of the pressure test be performed using other than water, PG&E will provide Contractor the specifications for such test with the written authorization to proceed.
- 22.13.12 No portion of Contractor's test head or manifold shall be pressured over 72 percent SMYS during the testing of any PG&E facilities. PG&E will review Contractor's documentation for the test equipment and examine Contractor's test equipment for condition. PG&E's inspection or acceptance of Contractor's documentation or equipment

shall not relieve Contractor of the responsibility to perform and warrant the Work performed.

- 22.13.13 If a tested section fails to maintain the specified test pressure, Contractor shall determine the location of the leakage or failure. Contractor shall remove the defective section and install, with new material, a replacement section prior to reinitiating the test and the section shall be re-tested in its entirety, all at no additional cost to PG&E. The defective section shall remain the property of PG&E. Contractor shall be liable for any additional costs including, but not limited to, damages, repair, re-testing or investigation arising from failures under testing due to defective workmanship and/or materials furnished by the Contractor.
- 22.13.14 After each pipeline section is successfully tested, Contractor shall remove all moisture from pressure testing water. The pipeline shall be dried to a dew point of -40°F. This shall be verified by the use of a calibrated dew point tester. Prior to performing the verification, Contractor shall provide calibration documentation to the PG&E on-site inspector. The PG&E on-site inspector must witness the verification.
- 22.13.15 Contractor shall release hydrostatic pressure testing water in a controlled manner and in accordance with all permits from jurisdictional agencies and PG&E requirements.
- 22.13.16 Conduct soap testing of all branch connection welds and SAVE-A-VALVE installations. Test pressure shall be 100 to 110 psig in accordance with the documents attached hereto (see Attachment 11, "A-34, Standard, Piping Design and Test Requirements "). All welds that have not received Strength Testing (hydrostatic or nitrogen) shall receive a complete NDE-VT with soap test solution at current operating pressure. Conduct tests prior to coating and backfilling.

22.14 Construction As-Built Drawings:

- 22.14.1 Contractor shall comply with all of the requirements of Attachment 12, "PG&E CAD Specifications and Guidelines. " Contractor shall coordinate with PG&E to complete the as-built process for transmission stations (see Attachment 11, "TD-4461P-22, As-Built Process for Transmission Stations"). In the event of conflict, the most stringent requirement shall prevail. If Contractor determines that there is a conflict, Contractor shall immediately advise the PG&E Project

Manager, providing the paragraph number(s) and requirements that conflict.

- 22.14.2 Contractor will provide electronic copies of the Construction Drawings to its site construction organization for the purpose of developing As-Built Drawings. One (hard copy) master set of the As-Built Drawings shall be updated daily by Contractor, formatted as described herein, and made available at job site for the duration of the project. Contractor should conform to the requirements of the PG&E Recommended Practice for Engineering Drawing Signature Requirements (see Attachment 10, "RP 4461.1, Engineering Drawing Signature Requirements")
- 22.14.3 For all Work Contractor shall update one set of Construction Drawings daily with all corrected As-Built dimensions and information. Piping symbols shall be in accordance with PG&E Gas Standards. All As-Built data including, but not limited to, each weld with depth, electrolysis test stations and any material change of direction shall be surveyed and located by GPS.
- 22.14.3.1 Contractor shall make As-Built construction drawings available to PG&E at the job site at all times. Contractor shall maintain only one set of redline marked up drawings at the site; multiple copies are not permitted.
- 22.14.3.2 Mark up each As-Built Drawing in a clear and legible manner. If colored pencil is used, cross-out corrections, and do not erase previous marks. If, in the opinion of the PG&E Construction Manager, the As-Built Drawing is determined to be illegible, the drawing shall be reproduced at no additional cost to PG&E.
- 22.14.3.2.1 Use the color red to show additions and corrections.
- 22.14.3.2.2 Use the color green to show deletions.
- 22.14.3.2.3 Use the color blue to show comments.
- 22.14.4 To produce complete As-Built construction drawings, Contractor shall make notations and corrections, in red, on one set of construction drawings, to all of the following:
- 22.14.4.1 Correct pipeline dimensioning and depths, using PG&E approved survey data, at all elbows, tees, services, valves, angles, risers, caps, anodes, attachments and other fittings.

- 22.14.4.2 Update all quantities on the bill of materials.
  - 22.14.4.3 Identify locations of all field girth welds, angle points, weld numbers, and depths.
  - 22.14.4.4 Identify changes in pipe wall thickness, grade, coating and locations of test sectioning.
  - 22.14.4.5 Foundations, stub-ups, and equipment locations.
  - 22.14.4.6 Building outlines and internal configurations including walls, windows, doors, fire protections, ventilation, electrical, and lighting.
  - 22.14.4.7 Piping plans and sections including valves, instruments, pipe supports, and branch connections.
  - 22.14.4.8 Electrical power switchgear and distribution including conduit runs and wiring.
  - 22.14.4.9 Control systems and instrumentation including logic diagrams, wiring, terminations, and support racks.
  - 22.14.4.10 For all dimensions and information that match the original design exactly, Contractor shall verify, by circling in red, the design dimension on construction drawings.
- 22.14.5 Prior to pressure testing, Contractor shall provide a single line drawing for attachment to the strength test pressure report indicating:
- 22.14.5.1 All as-installed pipe lengths by size, grade, and wall thickness.
  - 22.14.5.2 All as-installed pipe fittings and appurtenances by grade, size, and wall thickness.
  - 22.14.5.3 Elevations of high and low points on the as-installed system.
  - 22.14.5.4 Location of actual test point, with elevation.
  - 22.14.5.5 Locations of dead weight testers.
- 22.14.6 Contractor shall provide a complete set of corrected As-Built piping construction drawings to PG&E in accordance with Sections 19.6, 31.7.16, and 31.8.4 through 31.8.6 of this Specification.
- 22.14.7 In the event Contractor fails, refuses or is unable, for any reason, to provide current As-Built drawings during the performance of Work under a contract, PG&E reserves the right to withhold from any payment due Contractor an amount sufficient to have such As-Built drawings created by others. By signature to this Contract, Contractor acknowledges that As-Built drawings are a material requirement in the performance of the Work.